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ABSTRACT

Developed and coordinated by the Bureau of Reading Education of the New York State Education Department, Project Alert is a statewide inservice program to facilitate instituting or improving the diagnostic-prescriptive approach to reading instruction. As part of this program, a reading resource kit was prepared by the bureau to give structure and direction to the projects in the local schools. The multimedia kit contains nine packages, each analyzing one skills topic in reading. This seventh package, "Reading Comprehension Related to Thinking Processes," provides teachers with information and activities to improve their competency in the art of questioning. The first section of the package introduces and reviews background information designed to help the teacher set or select objectives for reading comprehension as related to the thinking processes. Section two provides an outline of reading comprehension levels-skills. The third section correlates the skills of reading comprehension with the thinking processes. And section four provides activities and practices for developing question/response techniques. General directions for using the package are provided. (TO)

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ED105432

# INSERVICE READING RESOURCE KIT

## PACKAGE VII

# READING COMPREHENSION

# RELATED TO THINKING PROCESSES

A program designed to improve teacher competency

in the teaching of reading

The University of the State of New York
The State Education Department
Bureau of Reading Education
Albany, New York 12224

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# FOREWORD

The development of reading comprehension skills has always been a critical aspect of any reading program. Much discussion has focused on the definitions, skills and procedures involved in the area of comprehension. The art of questioning by teachers in developing comprehension skills is recognized as an important aspect in training students to respond to printed material. This package also provides teachers with information and activities to improve their competency in the art of questioning.

The package is not intended as an exhaustive review of comprehension skills or teaching techniques but provides a working set of definitions and activities for teachers examining levels of questions and student responses. The primary organization and content was designed by a team from the Gates-Chili Central School District headed by Arlene B. McShea, Director of Language Arts, and assisted by Marie Eggleston, Sandra Mehlenbacher and Mary Eunice Weinkauf. Peter Madsen, Director of Educational Communications, and Ford Button, Elementary Art Consultant, contributed talent and consultant services to those portions of the package which involved the other media.

New York State Education Department consultants involved are Jane Algozzine, Chief, Bureau of Reading Education, and Alberta C. Patch, Associate in Reading Education, who gave direction and advice in the development of the manuscript.

Thomas P. Fitzgerald, Associate in Reading Education, contributed management services in the final stages of production.

Judy Jarett DelBosco, Cooperative Development Consultant, Nassau BOCES, provided consultant as well as editing services.

All those involved in the publication of this package hope that teachers will benefit from its use and will feel free to supplement the contents.

Inservice Reading Resource Kit (Part II)

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# INTRODUCTION

## STATEMENT OF INTENT FOR THE PACKAGE

This package should be considered as supportive to any reading program presently being used by the teacher. It is, in itself, not an exhaustive study of reading comprehension as related to thinking processes. It is, rather, an entry project which should facilitate further investigation and study into the complexities of teaching reading comprehension.

The skills, as identified for this project, are selective and defined within the context of this package only. It is recognized by the authors that the skills herein are not the only skills of reading comprehension nor are they the only thinking processes. Their use and definition are subject to individual interpretations. Open discussion, through agreement and disagreement, is encouraged as a means of accomplishing the goal of the package - to aid the teacher in improving her individual competencies for the teaching of reading comprehension.

This package is designed to aid teachers in improving their competencies in the teaching of reading comprehension. The material may be:

1. used as an inservice course with group leaders conducting the activities.
2. applied to any grade or level of instruction.
3. used as a district, building, team or grade level project.
4. included as part of college level courses in reading or curriculum.
5. studied by individual teachers as part of their efforts toward self-improvement.

Final analysis and evaluation of the package will be determined by the advances teachers make beyond the described activities and projects.

The intent is to answer questions about reading comprehension which often concern teachers.

1. What are the skills of reading comprehension?
2. In what ways are the thinking processes related to reading comprehension?
3. What are some techniques for improving procedures for asking good questions?
4. How can the teacher evaluate the students' responses to questions?
5. What are some activities that can be used to supplement or augment the reading program?

In answering these questions, the package is divided into four components, following a brief introduction (pp. 1-5).

First Section introduces and reviews background information which will help the teacher set or select objectives for reading comprehension as related to the thinking processes. (pp. 6-17)

a) Competent Teacher Demonstrates (pp. 6-8)

b) Goal Setting Questionnaire (pp. 9-17)

Second Section provides an outline of reading comprehension levels-skills (pp. 18-58)

a) Levels-Skills of Reading Comprehension - Chart #1 (pp. 19-20)

b) Description of Levels-Skills (p. 21)

c) Overview Description (pp. 22-36)

d) Tests (Form A, B, Post-Test) for Comprehension Skills (pp. 37-58)

Third Section correlates the skills of reading comprehension with the thinking processes. (pp. 59-85)

a) Levels-Skills of Thinking Processes - Chart #2 (p. 60)

b) Description of levels-skills (pp. 61-63)

c) Bloom's Taxonomy (pp. 64-69)

d) Guilford's Productive Thinking (p. 70)

e) Piaget's Intellectual Development (pp. 71-72)

f) Raths' "Thinking Operations" (pp. 73-78)

g) Tests on theory of thinking processes (pp. 79-85)

Fourth Section provides activities and practices for developing question/response techniques. (pp. 86-135)

a) Overview of asking good questions (pp. 87-90)

b) Interpreting the response (pp. 91-96)

c) Bloom's major categories (pp. 96-100)

d) Bloom's picture activity (pp. 101-105)

e) Do questions help us teach (pp. 102-105)

f) Activities working from stories (pp. 106-124)

g) On your own with questions (pp. 125-127)

h) Student response activities (pp. 128-135)

Appendix

a) Bibliography

b) Classroom activities

c) "Use of Questions"

## GENERAL DIRECTIONS FOR USING THIS PACKAGE

Teachers may begin with any segment of this package. They may then proceed in whatever order best meets their needs. To obtain optimum benefits, it is recommended that teachers participate in all segments of the program. For example, one way of working in the program would be to start with the activity section. This would be helpful in using specific ideas related to classroom activities for teaching reading comprehension as related to the thinking processes. The teacher may then feel the need to study the questioning section as a way of improving the questioning techniques for reading comprehension as a thinking process.

Proceeding further in the package, an explanation of the comprehension skills and thinking processes would help the teacher understand the theory involved.

Another alternative would be to administer the pre-tests included in the package. This would help teachers identify their individual strengths and weaknesses as related to the skills of reading comprehension and the theories of thinking processes.

Group discussion and study of the references is advised for all segments of the package.

# DIRECTIONS TO GROUP LEADERS

All group leaders should:

1. study the package thoroughly.
2. use only one section at a time in working with teachers. Prior to using the sections, the leader should study and review additional related information.
3. spend as much time on each section as seems appropriate to the group.
4. work with small groups (6 - 10) to allow for individual interaction.
5. be aware of the diversity of background experiences that each member brings to the group and utilize these experiences to facilitate discussions and interpretations.
6. permit the group to extend activities of each section into their own situations, needs, and purposes.

Recording these projects and activities and adding them to the program for future use will increase the effectiveness of this package.

## Section I

To assist teachers in setting or selecting objectives for their reading program, especially for comprehension skills, we will begin with this suggested activity.

A COMPETENT TEACHER DEMONSTRATES

Directions: This activity includes a color book and a list of eight competencies which a teacher should demonstrate.

The purpose of this activity is to review with teachers some of the major considerations that can be demonstrated as competent teaching to develop reading comprehension. Through discussions, the individual teacher becomes more aware of the importance of developing goals and objectives for the teaching of reading comprehension. In turn, these objectives should be transmitted to the students and their parents.

The "coloring book" activity serves as a follow-up classroom activity. Teachers should discuss each of the "student goals" with the students and further allow them to add their own goals to the list. If students take the coloring book home and discuss it with their parents, the goals of the school's program can be shared with parents through the children.

Another use of the activity would be for initiating discussion with parents. The parents should be invited to discuss the school's reading program and how it intends to help the children learn to read. The student booklet could then be distributed for the parents to discuss with their children in their homes.

This book tells you about some of the reasons why you learn how to read. Your teacher will talk with you about the pictures. Try to think of some other reasons why reading is important to you..... then, color the pictures.

Name _____

Date _____

ME–

THE BEST READER I KNOW!

I like to read alot.

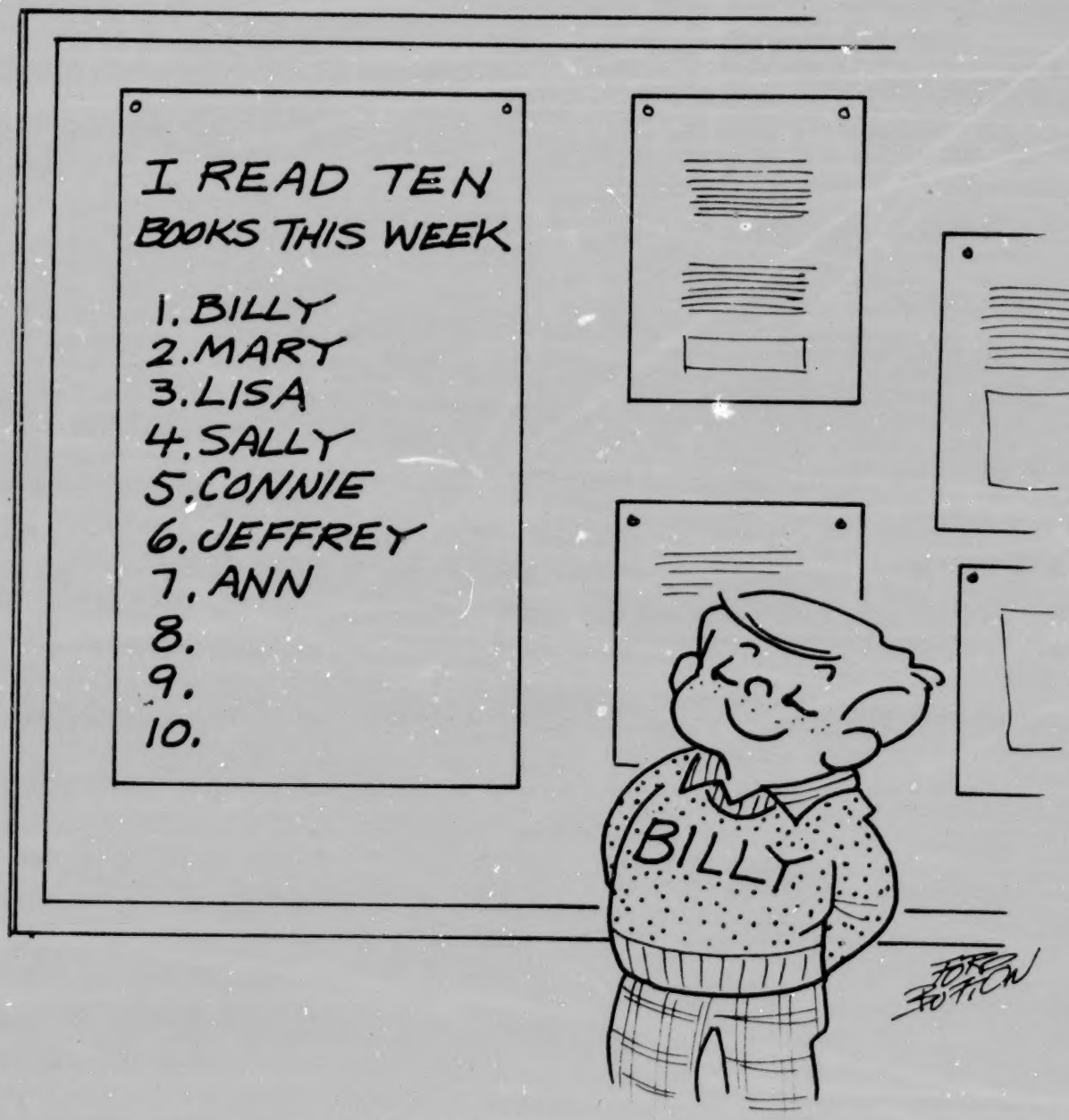
I enjoy reading about things I like.

Sometimes I wonder about things - I can read to find the answers.

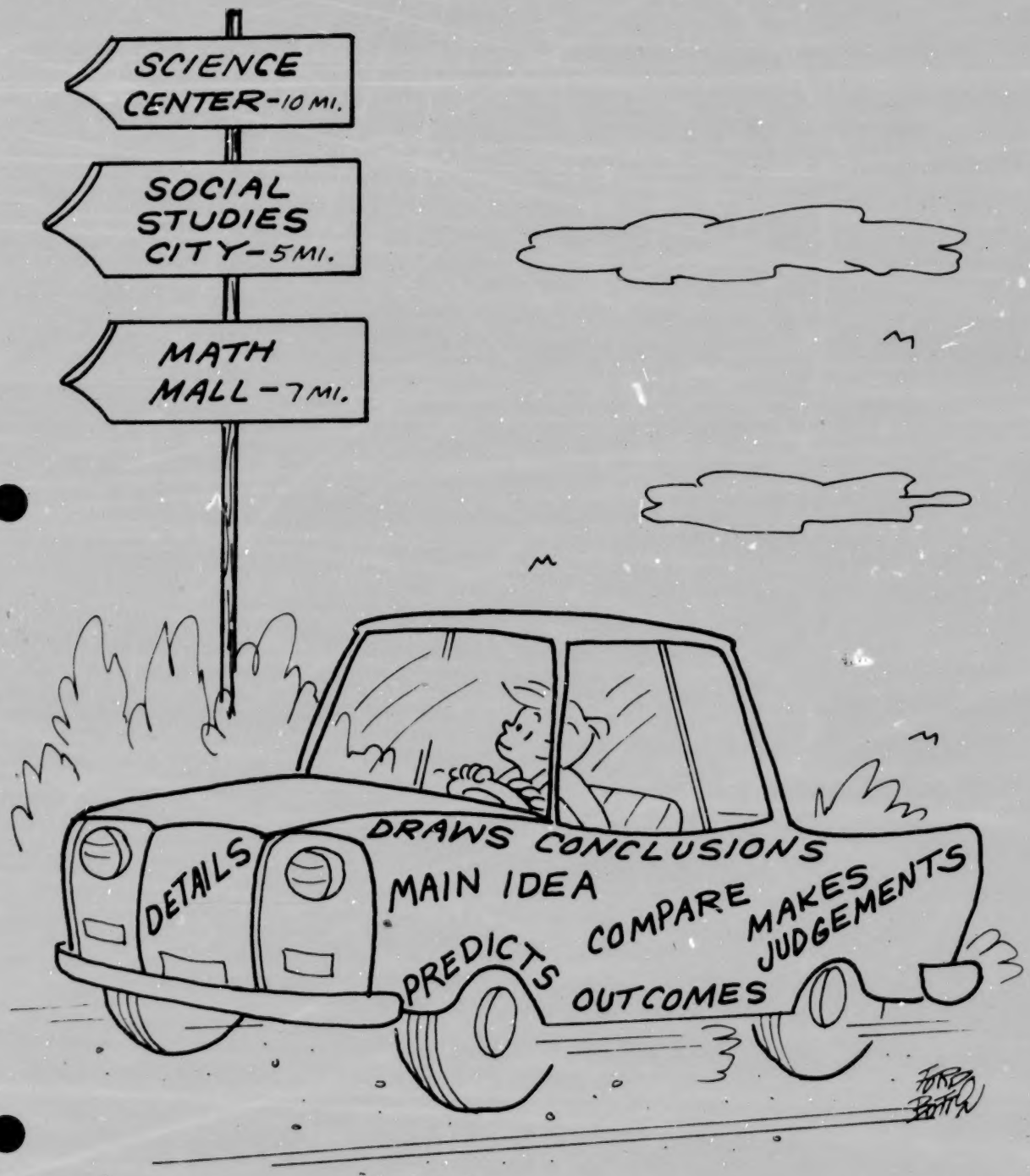
I can find answers to lots of questions in library books and magazines.

When I read, I think - then I can make new things.

When I read, I find out how to do things I like.

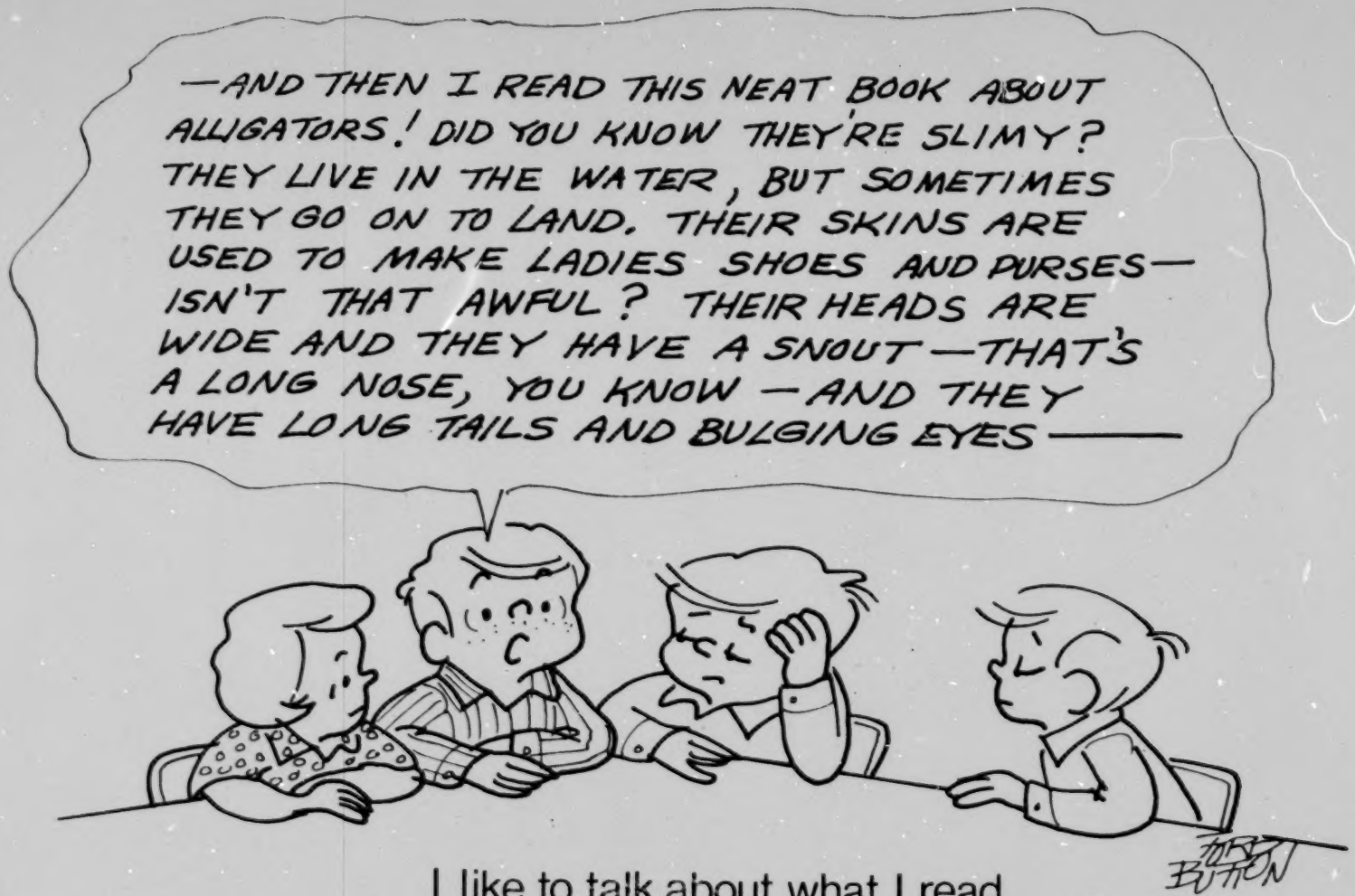



I like to get good reports in reading.




I know how to read my Science, Math, and Social Studies.

I learn things in books which help me to be a better person.


—AND THEN I READ THIS NEAT BOOK ABOUT ALLIGATORS! DID YOU KNOW THEY'RE SLIMY? THEY LIVE IN THE WATER, BUT SOMETIMES THEY GO ON TO LAND. THEIR SKINS ARE USED TO MAKE LADIES SHOES AND PURSES— ISN'T THAT AWFUL? THEIR HEADS ARE WIDE AND THEY HAVE A SNOUT—THAT'S A LONG NOSE, YOU KNOW—AND THEY HAVE LONG TAILS AND BULGING EYES——
BUTTON

I like to talk about what I read.

Designed and Produced By

Gates Chili Central School District

Spring 1973

A competent teacher demonstrates:

1. a caring and sensitive attitude toward the needs and values of children.
2. a knowledge of theoretical models of the thinking processes.
3. a knowledge of the skills of reading comprehension.
4. an awareness of the interaction between the thinking processes and the skills of reading comprehension.
5. the application of questioning techniques to reading comprehension as a thinking process.
6. an ability to relate reading comprehension skills and thinking processes to content areas.
7. an ability to select materials appropriate for the interests and reading level of the student.
8. skill in continuing diagnosis and evaluation.

The competent teacher facilitates a program in reading which allows the student to:

1. read widely.
2. locate information using a variety of materials.
3. adjust reading skills to fit the content of the material.
4. apply reading skills to accommodate personal interests.
5. be stimulated to find answers in reading as well as new questions.
6. incorporate and apply the thinking processes to the skills of reading comprehension.
7. seek out new ideas, information, and values from reading.
8. apply reading skills to meet self-determined goals.
9. interpret success as appropriate to standards set by the school.
10. demonstrate comprehension of what was read by communicating ideas, knowledge, and judgments to others.

# GOAL SETTING QUESTIONNAIRE

Directions:

This activity may be used in several different ways. Teachers may take the questionnaire as a group to share their attitudes and opinions by indicating "important - unimportant" scale to each item. After marking the items according to personal philosophies, the group should compare its choices through discussion of the individual items. In this way teachers become more aware of their diversity of opinions, backgrounds and values with regard to specific areas of reading. Comparisons can be helpful to individual teachers, giving them insight and knowledge in selecting materials, approaches and techniques for the teaching of reading. Group discussions on goal setting will prove beneficial in developing areas of agreement among teachers who work together in team teaching, multi-aged or multi-graded situations.

To use this activity with students, the student questionnaire should be administered in two forms with each item marked:

(1) important to unimportant

(2) easy to hard.

The student should be instructed to mark the questionnaires as to how he "sees" the individual item. Following this, the teacher can study the student(s) responses for the purpose of setting realistic goals in the reading program for individual students in the class.

Responses of students should be made available to them by conferences or through class discussions. Setting goals with and for the students (based on what they interpret as important-unimportant, easy-hard) is a valuable experience that gives meaning and intent to what the student and the teachers will do during reading activities.

In addition, this activity will permit the teacher to examine and contrast her opinions against the opinions of the students. This, in itself, can be a very revealing experience for the teacher and will aid in defining objectives and approaches for the students' programs. Administering the questionnare at a later date, after the teacher and the student have worked toward the set goals, is often helpful in that it permits students to interpret their individual progress. If what was once unimportant or hard changes to become important or easier, it is a positive endorsement of goal setting for both students and teachers.

## _____ QUESTIONNAIRE

After each number there is a statement about reading. Read the statement carefully, and block in one circle to show how you feel about the statement.

1. Learning to read better is

important 0 0 0 0 unimportant

2. Telling about what I have read is

important 0 0 0 0 unimportant

3. Writing about what I have read is

important 0 0 0 0 unimportant

4. Getting the main idea from what I read is

important 0 0 0 0 unimportant

5. Reading stories is

important 0 0 0 0 unimportant

6. Reading the newspaper almost every day is

important 0 0 0 0 unimportant

7. Reading magazines is

important 0 0 0 0 unimportant

8. Reading books is

important 0 0 0 0 unimportant

9. Reading textbooks is

important 0 0 0 0 unimportant

10. Knowing lots of words is

important 0 0 0 0 unimportant

11. Knowing how to figure out words I don't know is

important 0 0 0 0 unimportant

12. Reading in social studies is

important 0 0 0 0 unimportant

13. Reading in math is

important 0 0 0 0 unimportant

14. Reading science books is

important 0 0 0 0 unimportant

15. Having someone ask me questions about what I have read is

important 0 0 0 0 unimportant

16. Choosing what I want to read is

important 0 0 0 0 unimportant

17. Finding time when I can read is

important 0 0 0 0 unimportant

18. Class or group discussions about what we have read is

important 0 0 0 0 unimportant

19. Reading about something after the teacher has explained some of it is

important 0 0 0 0 unimportant

20. Taking books from the library and reading them is

important 0 0 0 0 unimportant

21. Writing book reports about books I have read is

important 0 0 0 0 unimportant

22. Doing reading for homework is

important 0 0 0 0 unimportant

23. Tests in reading are

important 0 0 0 0 unimportant

24. Liking to read is

important 0 0 0 0 unimportant

25. Reading poems is

important 0 0 0 0 unimportant

26. Helping others to learn to read better is

important 0 0 0 0 unimportant

27. Having other students help me with my reading is

important 0 0 0 0 unimportant

28. Getting good marks in reading is

important 0 0 0 0 unimportant

29. Thinking about what I read is

important 0 0 0 0 unimportant

30. Feeling like the people I read about is

important 0 0 0 0 unimportant

31. Reading to learn new things is

important 0 0 0 0 unimportant

32. Understanding what I read is

important 0 0 0 0 unimportant

33. Reading silently by myself is

important 0 0 0 0 unimportant

34. Reading out loud before the class or a group is

important 0 0 0 0 unimportant

35. Reading work in a reading group is

important 0 0 0 0 unimportant

36. Relaxing by reading is

important 0 0 0 0 unimportant

37. Having reading class every day is

important 0 0 0 0 unimportant

38. Knowing how to read well is

important 0 0 0 0 unimportant

39. Guessing how the story will end is

important 0 0 0 0 unimportant

40. Reading books or long stories is

important 0 0 0 0 unimportant

41. Deciding if I like a story is

important 0 0 0 0 unimportant

42. Imagining myself in the story is

important 0 0 0 0 unimportant

43. Feeling sad or happy from reading a story is

important 0 0 0 0 unimportant

44. Answering questions about what I have read is

important 0 0 0 0 unimportant

45. Remembering what I have read is

important 0 0 0 0 unimportant

46. Reading stories that make me laugh is

important 0 0 0 0 unimportant

47. Reading as well as my friends is

important 0 0 0 0 unimportant

48. Reading about things I don't know about is

important 0 0 0 0 unimportant

49. Reading to study is

important 0 0 0 0 unimportant

50. Reading to make an outline or take notes is

important 0 0 0 0 unimportant

51 Reading to do a report for class is

important 0 0 0 0 unimportant

52. Reading about things that interest me is

important 0 0 0 0 unimportant

53. Reading stories that show me how other people solve their problems is

important 0 0 0 0 unimportant

54. Reading to help me form an opinion is

important 0 0 0 0 unimportant

55. Reading for finding fact is

important 0 0 0 0 unimportant

56. Reading descriptions is

important 0 0 0 0 unimportant

57. Reading to find out what causes things to happen is

important 0 0 0 0 unimportant

58. Reading most of the details in a story or book is

important 0 0 0 0 unimportant

59. Reading fast is

important 0 0 0 0 unimportant

60. Reading to compare things is

important 0 0 0 0 unimportant

61. Reading to draw conclusions is

important 0 0 0 0 unimportant

62. Reading to find out more about something I already know is

important 0 0 0 0 unimportant

63. Getting what the author meant but didn't really say is

important 0 0 0 0 unimportant

64. Disagreeing with the author is

important 0 0 0 0 unimportant

65. Wanting my life to be like the way it is in a story or book is

important 0 0 0 0 unimportant

66. Getting ideas for making new things from reading is

important 0 0 0 0 unimportant

67. Feeling like I'm really there when reading a story is

important 0 0 0 0 unimportant

68. Understanding reading with numbers and symbols in it, as in math or science, is

important 0 0 0 0 unimportant

69. Understanding maps, charts, and graphs in textbooks is

important 0 0 0 0 unimportant

NAME: _____ Date: _____

## ITEM ANALYSIS OF READING QUESTIONNAIRE

| AREA | QUESTIONS |
|---|---|
| Attitudes | 1, 5, 15, 17, 18, 19, 22, 23, 24, 26, 27, 28, 29, 30, 32, 33, 35, 37, 38, 41, 42, 43, 46, 47, 53, 65, 67 |
| Skills | 4, 10, 11, 39, 40, 44, 45, 49, 50, 51, 54, 55, 56, 57, 58, 59, 60, 61, 63, 64, 66 |
| Content Areas | 9, 12, 13, 14, 25, 31, 48, 68, 69 |
| Oral | 2, 34 |
| Written | 3, 21 |
| Interests | 6, 7, 8, 16, 20, 36, 52, 62 |

## Section II

This section is intended to correlate the skills of reading comprehension with the thinking processes.

The outline of levels and skills, with appropriate definitions, does not necessarily follow any one authority but represents, what the authors feel, is a workable division. Teachers are encouraged to study this outline critically. Another schema may be more appropriate within the instructional program.

LEVELS-SKILLS OF READING COMPREHENSION

I. Literal Comprehension involves the recognition of that which the author specifically stated in the selection.

A. Identifies stated details

1. Locates names, places, events and dates

2. Selects specific details

3. Sequences events and actions

4. Identifies relationships

5. Recognizes emotions, traits and reactions

B. Identifies main ideas

1. Determines main idea on a sentence level

2. Determines main idea on a paragraph level

3. Determines main idea on a selection level

C. Identifies category of reading selection (fiction, non-fiction, etc.)

II. Interpretative Comprehension involves the recognition of the many alteratives which the author might have meant although he didn't state them specifically.

A. Draws inferences

1. Separates facts from opinions

2. Draws conclusions

3. Predicts outcomes

B. Interprets words and phrases in context

III. Creative Comprehension involves the individual's drawing upon his background of information and experience, his value system and his originality to demonstrate that he relates to that which is specifically stated or implied in the selection.

A. Justifies evaluations and judgments

B. Formulates appreciations and value judgments

C. Makes imaginative comparisons

D. Extends selection or provides alternate conclusions

E. Projects written characterizations in non-written form

Reading comprehension levels are identified in three major categories--Literal, Interpretative, and Creative--hereafter, in the package, referred to as "Levels of Reading Comprehension".

Within each level, specific skills and sub-skills have been selected and stated as "skills of reading comprehension" throughout this package.

Chart #1 on pages 19-20 outlines levels, skills, and sub-skills to present minimum reading comprehension data in an organizational format. It is not intended to be all-inclusive or exclusive of other definitions or selections of levels, skills, or sub-skills.

The sequence is presented to identify the selected skills within each level. Each level will repeat the skills of all other levels. The application of skills is dependent upon the reading material and the reader's ability to critically read the selection. For example, the main idea may be stated by the author at the literal level, or the main idea may be inferred at the interpretative level, or the main idea may be an evaluation made at the creative level. At each level, the reader is critically analyzing the material.

Each skill and sub-skill is introduced with a behavioral objective term that identifies the skill as an objective of a reading comprehension program.

It is essential to the intent of this package that teachers adjust the "Levels and Skills of Reading Comprehension" (Chart #1) to their reading program. If a specific basal program or approach is used as the school's reading program, it will be useful to the teacher to incorporate those levels or skills in Chart #1 and to include definitions for the selected skills or levels.

In order to select methodology appropriate to implementing any reading program, it is necessary to delineate levels and skills that are important as objectives and specific goals of the reading program.

# OVERVIEW DESCRIPTIONS FOR SKILLS OF COMPREHENSION

## I. Literal Level

Comprehension at the literal level requires the child to be able to locate and/or remember the important details of the passage. At this level, details are directly stated by the author and provide the data necessary to interpret and appreciate the selection.

A. Identifies important names, places, events, and dates in the passage or story.

A reader will need to remember who the story is about, where the events occurred, when the events and actions happened in the story or passage.

Comprehension will be little more than simple understanding of the material used by the author to provide information about the passage or story. What, where, when, and who questions are most frequently used to check recall of details at the literal level. All questions at this level should be simply stated and will require very little, if any rewording on the part of the responder. Yes/no, single words or phrases quoted directly from the text are usually sufficient to answer questions about details.

B. Sequences actions and events of the selection

In addition to what, where, when and who details, the reader must be able to sequence or relate details to each other and to the topic about which the author is writing. This requires that the reader think in terms of observing, collecting, organizing and summarizing the facts to form the "gist" of the passage.

Simple questioning for sequence include:

1. What happened first, last, etc.?
2. Then what happened?
3. What happened next?

With more advanced reading, the student becomes aware of words or phrases in context that indicate sequence. These may include:

The preceding

The following

In order of importance

Consequently

As a result of

In consecutive order are

The series of

C. Identifies relationships among characters, events, and actions

Specific details at the literal level identify relationships in order to develop a theme, plot, or mood within the setting or situation of the story. Skills required to identify such relationships include:

1. Comparing and contrasting to note the likenesses and differences among and between character, actions, and events.
2. Citing the direct cause and effect in situations, actions or events

Answers to the questions to ascertain comprehension of relationships can be found directly stated in the passage.

1. The twin brothers, Tom and Jerry, moved to Maple Street last month. In what ways are Tom and Jerry alike?

2. The fatigue of almost continuous fighting resulted in low morale among the troops. What caused the low morale among the soldiers?
3. The rolling hills, fertile valleys, and the many lakes and rivers of Oregon reminded Joan of western New York. In what ways are Oregon and New York alike, according to Joan?
4. Because he accepted money for his performance, Howard was no longer eligible for amateur competition. What caused Howard to lose his amateur standing?

Certain words and phrases often precede or follow details pertaining to relationships of likenesses/differences, cause/effect, and include:

However, it should be pointed out that

In contrast to

It is apparent that _____ is unlike _____.

It is true that _____ but _____.

Nevertheless, _____ is also true.

Yet _____ is still a fact.

On the other hand

In spite of

Under the circumstances

It is obvious that

On the contrary

D. Recognizes traits, emotions and reactions of characters

The author will frequently describe, explain or state specific character traits, motives and reactions of the people about whom he is writing. Using details in this manner, the author establishes the general mood or plot of the passage that will permit the reader to

subsequently analyze and identify with the behavior of the characters in the passage.

Descriptive, colorful words help the reader identify feelings, moods, and actions of the characters.

His face, purple with rage

Gasping for breath, he staggered across the finish line.

She did not like the student's lying and cheating.

She wanted to be like Ellen, who was always self-confident and relaxed during a big game.

Billy loved the suspense and thrill of a good mystery.

Her face was radiant and glowing with happiness.

He could hardly stand still, he was so excited about the surprise.

E. Identifies main ideas at the literal level

Main ideas generally fall into two categories: objective main ideas that are factually stated by the author in reference to a topic, and subjective main ideas which are inferred or interpreted from reading the passage. Objective main ideas occurring at the literal level, usually are content or subject-oriented, while subjective main ideas tend to be associated with literature or narrative poetry and are interpretive in nature.

At the literal level, the author may state his purpose in the form of main idea(s) in the introductory paragraph, or he may conclude the selection with a summation of the highlights he has discussed. The format or organization used by the author may be designed to set the main ideas apart from the details of the passage and may include title, sub-titles, headings. Outlining and italicized words are sometimes used to point out ideas. Readers should learn the skill of locating topic sentences from which to get clues for main ideas.

Thinking at the literal level for comprehension of main ideas will require the reader to be able to relate the main idea(s) to the topic under discussion. Skills in observing, collecting,and organizing are employed in order to follow the development of the main idea(s). Comprehension is based on the reader's ability to remember important details and/or to be able to locate them in the text of the passage. The purpose of comprehension and thinking at this level is to gain new information about a topic or idea and to add information to his present concepts.

All questioning for factual information requires that the reader be checked for accuracy of facts and information as stated in the passage.

What is the topic of the story? (Identify the topic.)

What is the author's most important point? (Relating information to the topic.)

What conclusions does the author make about _____? (Relating information to the topic.)

What did you learn about _____? (Gaining new information.)

The author will frequently use words or phrases to indicate main ideas. These could include:

Primarily _____.

It is evident that _____.

In conclusion, it should be stated that _____.

In summary, we could say that _____.

_____ is indicative that _____.

Central to the issues are _____.

The result of this indicates that _____.

I maintain that _____.

The principal idea / premise / conclusion, etc. _____ is _____.

My purpose is to prove that _____.

It can be proved that _____.

_____ indicates that _____.

The test reveals that _____.

NOTES FOR TEACHING AT THE LITERAL LEVEL

The order of the skills at the literal level are not intended to be sequential according to the outline in Chart #1. They are cited in outline form only to identify them within categories. Order, for this study, is secondary to the purpose of questioning.

Many teachers and authorities recommend that questioning begin with identification of main ideas from a passage, followed by citing of the important details related to the main ideas. Others establish the significant details and then relate them to the main idea(s) of the passage.

Which procedure is followed is largely dependent upon the content of the material and the background and experience of the reader. It should be pointed out that some children think in "wholes" and are then able to relate the parts to the general idea(s). Other children first recognize the parts and then take the parts into the larger ideas. The teacher must be aware of the various modalities by which a student thinks. Flexibility in questioning will accommodate both details and main ideas.

II. Interpretive Level

At the interpetive level, the reader must be able to infer what the author intends but is not directly stating. By definition, this includes deriving meaning by reasoning and the drawing of conclusions based on evidence. The reader must be able to comprehend the literal facts or data in the passage and must be able to combine these with his background of knowledge and experience about the topic.

The reader must be communicating with the writer in order for him to interpret what the author intended to transmit. This communication is only possible when the material is appropriate to the student's reading level. Often, the author does not limit the conclusions or outcomes to one opinion but allows the reader, through his interpretations, to make several conclusions. The reader must depend upon his ability to interpret the semantics of language and upon his skills for inferencing. Interpretations are often highly personal and individualistic to the reader. However, he should be able to justify his interpretations by critical analysis of the facts and experiences.

Thinking skills at this level are highly developed and go beyond simple recall, rote memory, and basic understanding. They include Bloom's applying, analyzing, and synthesizing levels of cognitive domain. The reader is required to apply what he knows to other content and materials. He must analyze the parts and relate them to concepts beyond what is stated. He must synthesize information and assimilate and accommodate it into his concepts and experiences. Raths' thinking skills*, which he identifies as classifying, interpreting, looking for assumptions, hypothesizing, and application of facts and principles are necessary to employ in order to make interpretations from reading and thinking. All interpretation is dependent upon how well the reader can assimilate and accommodate the concepts that are included in the selection read.

In order to make interpretations, the reader will be required to think in terms of a variety of possibilities and to consider several different interpretations. Open-ended thinking, as identified by Guilford's divergent production*, is a prerequisite to forming interpretations at this level.

*See pages 74-79 of this package
*See page 71 of this package

Questioning at the interpretive level allows for:

Open-ended answers.

Comparisons for information and data with other authors.

Further questioning by the student.

Paraphrasing of the author's words into the words of the responder.

Discussion and interaction among students and/or the teachers.

A. Draws Inferences

Inferences are made by the reader based on the information (often details) in the passage plus the background of his experience relevant to the passage plus his ability to reason by deduction. He will need to be able to identify the author's works as fiction and non-fiction writing. This will help him establish validity of factual information.

He will need to recognize propaganda, advertising, and persuasion as he interprets and makes inferences.

The reader will need to refer to his own background of facts and information. In addition, the stated factual details are important in establishing the intended or assumed conclusions the reader will make.

1. Separates facts from opinions

Questioning for skills of separating facts from opinions could include:

Could _____ really have happened? How do you know?

What does the author want to think about _____?

What is the author saying that makes you think _____?

Is _____ a real person?

What clues did you use to determine that this is an autobiography?

What parts of the story are included just to make it more interesting to the reader?

Where could we look to check that information?

Words and phrases in the passage often indicate statements of fact and opinion. They could include:

It is my opinion that _____.

The evidence supports _____.

In view of the facts, we can conclude that _____.

Qualifying words, such as but, however, frequently, commonly

All-inclusive words such as never, always, seldom, hardly ever, repeatedly, rarely, all, always

2. Draws conclusions

Conclusions are decisions made by the reader. Inductive and deductive reasoning allow the reader to reach conclusions. Logical reasoning is implied, since the inferences drawn must "make sense" to the reader in the light of his knowledge and interpretation of the selection. He should be able to verify and support his conclusions with evidence given in the content.

Questioning for reaching conclusions should include:

What facts does the author give to support what you are saying?

Give an example from the selection to prove your conclusion.

What does the author say that makes you claim that?

Are there any other conclusions you could draw from the author's (your) remarks?

On what do you base your assumptions?

Based on your conclusions, would this always be true?

Words and phrases often help the reader to make a conclusion.

It should be noted that _____.

Let me reiterate some facts _____.

The evidence supports the facts that _____.

Compound sentences that contain subordinate clauses prefaced by because, therefore, inasmuch as, likewise, due to the fact that, by reason of, on account of, since, proof for, justifiably, supportive to.

3. Predicts outcome

In predicting outcomes, the reader must go beyond what is stated to make calculated guesses and projects. Unlike the literal level, where the reader can check his predictions against the author's, the reader must now be able to project beyond what is known or stated. Such predictions will provide the reader with background needed to solve problems and critically evaluate from the content and the context of the passage.

Questions for skills for predicting outcomes include:

What will happen because of _____?

In case this should happen to us, what must we be prepared for?

If you could write another ending to this story, how would it end?

What might have happened to _____?

If we changed _____, what would happen to _____?

What made these things inevitable _____?

Do you think other authors would take the same viewpoint? Explain.

Words and phrases often clue the reader to the author's predictions.

In advance of _____

We can foresee that _____.

The forecast is _____.

Projecting further, we can tell that _____.

Anticipating further, it is evident that _____ will happen.

Because of the precedent set, _____ will happen.

If _____ had happened, _____ might have resulted.

I can envision a world of _____.

My guess would be that _____ will happen.

Readers can be encouraged to anticipate outcomes, thus, deriving pleasure from accuracy of guessing.

B. Interprets words, phrases in context.

Semantics play a large role in the development of interpretive comprehension. As words are merely symbolic representations for ideas and concepts, the reader must be able to understand the meaning of the words in the contextual setting of the passage. Teachers should help students recognize the multiple meaning of the word, similes, metaphors, and forms of language. Awareness of the subtle shades of meaning broaden interpretations. The reader will not be able to make inferences without thinking about word meanings.

Questions to help interpret words or phrases include:

What does the author mean when he states _____?

What would be another meaning for _____?

Describe _____ in your words.

How does _____ add to the mood of the story?

If the author had not said _____, do you think you would have _____?

How does this pun add flavor to the selection?

What might the author have added to make this more descriptive?

What would be another way of saying _____?

## NOTES FOR TEACHING AT THE INTERPRETIVE LEVEL

At the interpretive level, the teacher will be extending skills from the literal level and will be preparing the reader for the creative thinking and reading level.

The bulk of teaching will occur at this level. The individual teacher should feel free to add any skill that will extend comprehension at the interpretive level.

Assignment and definitions of skills at this level can include any skill involved with reading as a critical thinking act. Critical reading cannot be separated from thinking. Many reading programs include critical reading skills as a separate level. The authors of this package define critical reading skills as the reasoning ability to inductively and deductively analyze reading selections. In this sense, critical reading is a function at all levels and is applicable to all skills.

The teacher must be open-minded and skillful in questioning techniques. No child should feel pushed through his interpretations. Care should be taken to accommodate the wide variances among children at this level. The teacher must become familiar with and concerned about each child's background of experiences and knowledge, his interests and purposes in reading and learning, his language levels and his thinking processes.

III. Creative Level

Comprehension and thinking at this level go beyond the content and the message of the passage or story into the feelings, attitudes, and value judgments of the reader. What is gained from reading at this level is highly personal to the individual.

The value of the content of material may be judged from a predetermined criteria to which the reader will react and/or judge the worth of the message or content. Likes and dislikes, tastes and interests, mood and personalities of the reader affect the reader's creative and appreciative reading and thinking. Creativity and originality, coupled with an analysis of the writing, are important outcomes at this level. Values are weighed, appreciations are formed, and judgments are made according to the individual reader's personal reaction with and from the passage as defined for or by him.

It is important to note that this level is not just for the "top" or "enriched" level student. Children are creative in their thinking and interpretations and will develop further in this area if they are given the opportunity to perform and practice in creative activities.

Questions at this level have no right or wrong answers. Very often questions have no immediate answers. The reader will often require time to wonder at and ponder over questions at this level. The reader will often think of many alternative answers to questions.

Questions at this level include:

Based on what you know about _____, why do you think the author wrote this story?

If you were _____, what would you have done or said?

Are there any other ways the child could have solved this problem?

Did you like this book? Why?

What choices did Mary have? Do you think she made a good choice? Why? Why not?

Do you think all students feel like Dick? Do you feel like him?

If you felt this strongly, what would you do?

Given _____, _____, _____, what could you do with them?

In what way did Charles show he was angry? Have you ever felt like this? (NOTE: Children should always feel comfortable in expressing their emotions openly and honestly, but no child should ever be forced to talk about things that are highly personal or emotional to him.)

Can you make up a problem for us to solve?

What would our lives be like if we _____?

If you could change any part of this story, what would you change? Why?

## NOTES FOR TEACHING AT THE CREATIVE LEVEL

Reading at the creative level is largely dependent upon attitudes and values one has toward reading. The teacher can do much to foster positive attitudes and appreciations toward the act of reading.

The reader needs time to think about what he has read and should have opportunities to discuss the reading selection. All readers and learners need to feel that they are successful in reading and learning. A variety of materials should be available at various levels of difficulty. Students can enjoy reading and evaluating what they can understand on their own. The child will only read with interest and enthusiasm those things that are of value to him. Patience, understanding, and acceptance of children and their responses and reactions are essential if children are to learn to "love and cherish" reading.

Evaluations and judgments about what one is read dictate that the teacher carefully organize and plan the reading program to include criteria for evaluation. Tasks should be clearly defined and aligned to the interests, experiences, and purposes set for reading the passage or story. Involving the reader in task-setting objectives and purposes is necessary if the reader is to ultimately become a creative, thinking person. In this way, reading is a tool for learning, a vehicle for a source of relaxation, and a way to develop problem-solving habits.

TESTS (Form A, B, Post-Test)

DIRECTIONS:

Form A may be used as an Introductory Activity to promote discussion about reading levels and specific reading skills. It is advisable to have the group study chart #1 and the material that describes the chart. Then the group should take the test, Form A, and compare their answers through discussion of the individual items.

Form B is a more detailed test of reading comprehension skills and can be used as a follow-up activity.

Form C requires that the group analyze and discuss the questions related to each passage. They can then add additional questions and can include a session for discussing the thought processes as related specifically to reading comprehension. An extension of this activity could include a test for use with the school's reading program.

# TEST FOR READING COMPREHENSION SKILLS

Teachers often check a pupil's comprehension of reading material by asking questions about the material. In this way, teachers evaluate the pupil's competence in understanding what he has read.

The following test includes some of the kinds or types of questions that teachers frequently use to check comprehension. Answers have been provided at the end of the test.

You may not agree with the answers selected. Differences in terminology and definition will account for this discrepancy. Teachers should use this test by discussing the answers and personal choices made on the items. In this way, knowledge is extended, and terminology is clarified.

Teachers are also encouraged to refer to textbooks and other references related to reading comprehension.

FORM A FOR READING COMPREHENSION SKILLS

DIRECTIONS: Circle the letter that represents the best answer.

1. A book review in a magazine or newspaper usually describes the theme or plot of the book by summarizing the

   a. conclusion
   b. main ideas
   c. judgments
   d. factual details

2. To examine two or more ideas, things, events, characters, etc., is to

   a. recognize emotions
   b. identify relationships
   c. sequence events
   d. draw conclusions

3. To judge a selection by some pre-determined criteria is to

   a. predict outcomes
   b. separate fact from opinion
   c. identify relationships
   d. justify an evaluation

4. turned the key in the ignition, shifted into "drive" and slowly moved forward. This is an example of

   a. details of facts
   b. selection of main ideas
   c. drawing conclusions
   d. sequencing details

5. The Dred Scott decision brought a crisis by over-ruling previous compromises. This decision might have further divided the nation.

   a. locates specific details of fact

   b. selects main ideas

   c. draws conclusions

   d. identifies likenesses and differences

6. To form an opinion based on critical or objective analysis of the passage is to

   a. predict outcomes

   b. draw conclusions

   c. separate facts from opinions

   d. select main ideas

7. When we read "Letters to the Editors" in newspapers and magazines, we should be aware of the biases of the writer. This requires the reader to

   a. identify specific details

   b. identify main ideas

   c. separate facts from opinions

   d. identify relationships for likenesses and differences

8. Find the sentence that tells what color John's coat is. This refers to the skill of

   a. selecting main ideas

   b. identifying specific detail of fact

   c. drawing conclusions

   d. predicting outcomes

9. What would another good title for this story be? This is an example of

   a. selecting main idea

   b. identifying specific details of facts

   c. drawing conclusions

   d. interpreting words in context

10. To be able to give reasons why one enjoys a good mystery is to

   a. draw a conclusion

   b. interpret words in context

   c. justify judgments

   d. predict outcomes

11. To guess how the mystery will be solved based on the clues is an example of

   a. drawing conclusions

   b. interpreting words in context

   c. predicting outcomes

   d. identifying specific details of facts

12. Although the author doesn't actually use the words "happy" and "pleased", we know from what we have read that May was happy and pleased with her new watch. This requires

   a. identifying specific details of facts

   b. drawing conclusions

   c. selecting main ideas

   d. recognizing emotions

13. In the fall, I will pick apples. Fred will fall if he is not careful. What is the meaning of the word "fall" in these two sentences? This refers to

   a. identifying details of fact

   b. separating fact from opinion

   c. interpreting words in context

   d. justifying evaluations

14. To decide how the story plot moves along from one event to another is to

    a. identify details of facts

    b. identify relationships

    c. sequence details

    d. select main ideas

15. What event does the author cite as the "turning point" of the Civil War? This is an example of

    a. separating facts from opinions

    b. drawing conclusions

    c. forming value judgments

    d. identifying specific details of facts

16. Headlines in a newspaper are often used to express

    a. conclusions of the editor

    b. relationships between events

    c. evaluation of the article

    d. main ideas of the article

17. When I read the "Diary of Anne Frank", I felt like I had lived through the escape with her. This pupil is expressing

    a. selection of main ideas

    b. a conclusion

    c. an appreciation or judgment

    d. a prediction

18. After reading this passage, what do you think an "Ad Hoc Committee" is? This refers to

    a. understanding meaning from context

    b. evaluation based on a criteria

    c. identification of a specific detail of fact

    d. sequence of events

19. What makes the main character in this story different from the usual story character? This requires the pupil to

    a. predict outcomes

    b. separate facts from opinions

    c. evaluate based on set criteria

    d. identify a specific detail

20. Who presented the award to the winner of the contest? This is an example of

    a. drawing a conclusion

    b. predicting an outcome

    c. identifying a specific detail of fact

    d. forming a judgment based on values

ANSWER KEY

TEST FOR READING COMPREHENSION SKILLS

1. main ideas
2. identifying relationships
3. justify an evaluation
4. sequencing details
5. draws conclusions
6. draws conclusions
7. separate facts from opinions
8. identifying specific detail of fact
9. selecting main idea
10. justify judgments
11. predicting outcomes
12. drawing conclusions
13. interpreting words in context
14. sequence details
15. identifying a specific detail of fact
16. main ideas of the article
17. an appreciation or judgment
18. understand meaning from context
19. evaluations based on set criteria
20. identifying specific details of fact

TEST FOR READING COMPREHENSION SKILLS

FORM B

DIRECTIONS:

Identify the comprehension level for each of the following tasks by writing the level you select in the space provided. Identify the specific skill for each of the following items by drawing a circle around the appropriate letter.

Check your answers with the suggested answer key for Form B.

1. Task: Prove an opinion by quoting an authority or source of reference.

   LEVEL: _____

   SKILL: a. recognizing propaganda
   b. seeing likenesses and differences
   c. verifying a conclusion
   d. selecting a relevant detail

2. Task: If you would pick Joe in this story for your friend, what reasons would you have for making this decision?

   LEVEL: _____

   SKILL: a. selecting a main idea
   b. identifying a theme or plot
   c. forming a value judgment
   d. drawing a conclusion

3. Task: Tell how the kittens in this article are like cats.

   LEVEL: _____

   SKILL: a. comparing likenesses and differences

   b. sequencing events

   c. forming judgments

   d. recognizing emotions

4. Task: In reading math problems, the reader must often read in small segments and then reread these segments in order to solve the problem.

   LEVEL: _____

   SKILL: a. forming judgments

   b. selecting main ideas

   c. sequencing factual details

   d. drawing conlcusions

5. Task: Explain the pun, ----------, used in this selection.

   LEVEL: _____

   SKILL: a. identifying words in context

   b. appreciating the values of others

   c. predicting outcomes

   d. selecting main ideas

6. Task: When a child narrows his reading scope to stories of a special interest to him, he is displaying _____.

   LEVEL: _____

   SKILL: a. recognition of emotional traits of characters

   b. identification of relationships

   c.

   d. recognition of propaganda

7. Task: Finish reading this book, so that you can become a champion chess player.

   LEVEL: _____

   SKILL: a. using understatements
   b. using overgeneralization
   c. predicting outcomes
   d. identifying relevant details

8. Task: Tracing the route taken by these explorers on a map.

   LEVEL: _____

   SKILL: a. comparing and contrasting data
   b. sequencing details
   c. drawing conclusions
   d. forming judgments and opinions

9. Task: Read these three biographies about Daniel Boone and explain what kind of man he was.

   LEVEL: _____

   SKILL: a. separating facts from opinions
   b. predicting outcomes
   c. recognizing emotional traits of characters
   d. identifying story setting

10. Task: Read the descriptions about the topic and decide what parts are included to embellish it in order to make it more interesting.

    LEVEL: _____

    SKILL: a. identifying likenesses and differences
    b. understanding word meaning in context
    c. separating relevant from irrelevant facts
    d. making predictions

11. Task: Find an example of symbolism in the poem and explain it.

LEVEL: _____

SKILL: a. evaluating by set criteria

b. understanding word meaning from context

c. predicting outcomes

d. identifying details of facts

12. Task: Read five articles from this fly-fishing manual, and decide what would be the best geographical area for fly-fishing.

LEVEL: _____

SKILL: a. predicting outcomes

b. forming judgments

c. identifying factual details

d. understanding words in context

13. Task: Explain the who, what, where and when to establish background information about this selection.

LEVEL: _____

SKILL: a. separating facts from fancy

b. identifying themes or plots

c. locating specific details

d. forming judgments

14. Task: Draw some conclusions about the value of summer vacations based on this selection.

LEVEL: _____

SKILL: a. making inferences

b. predicting outcomes

c. sequencing details

d. recognizing names, events, or dates of facts

15. Task: Explain how SQ3R (Survey, Question, Read, Recite, Review) is a valuable tool in reading social studies material.

LEVEL: _____

SKILL: a. forming value judgments

b. sequencing historical events

c. setting purposes for reading

d. identifying important characters in history

**ANSWER KEY**

**READING COMPREHENSION SKILLS AND LEVELS TEST, FORM B**

| | | |
|---|---|---|
| 1. | **Interpretative** | Verifying a conclusion |
| 2. | **Creative** | Forming a value judgment |
| 3. | **Literal** | **Comparing likenesses and differences** |
| 4. | **Literal** | Sequencing factual details |
| 5. | **Interpretative** | **Identifying words in context** |
| 6. | **Creative** | Setting values and appreciations |
| 7. | **Interpretative** | Using overgeneralizations |
| 8. | **Literal** | Sequencing details |
| 9. | **Interpretative** | Separating facts from opinions |
| 10. | **Interpretative** | Separating relevant from irrelevant facts |
| 11. | **Interpretative** | Understanding words in context |
| 12. | **Creative** | **Forming judgments** |
| 13. | **Literal** | Identifying factual details |
| 14. | **Interpretative** | **Making inferences** |
| 15. | **Creative** | Setting purposes for reading |

POST-TEST READING COMPREHENSION

AS RELATED TO THOUGHT PROCESSES

Directions:

Read each selection carefully. Then read the questions following the selection.

1. Identify the reading comprehension skills associated with the question. Discuss the choices of skills. Why is the question an example of the specific skill? What level of reading comprehension is identified with the skill? Note: Reading levels and skills overlap and inter-relate with other levels and skills. Several can often be justifiably allocated to any given skill or level.
2. Ask each person in the group to add other questions to the list. The group can then discuss its own selection of questions.
3. Another session could include identifying the thinking processes as applied to each selection and question. The group leader should follow the same procedures used in activity 1 and 2.

1

"Flight" by John Steinbeck*

About fifteen miles below Monterey, on the wild coast, the Torres family had their farm, a few sloping acres above a cliff that dropped to the brown reefs and to the hissing white waters of the ocean. Behind the farm the stone mountains stood up against the sky. The farm buildings huddled like little clinging aphids on the mountain skirts, crouched low to the ground as though the wind might blow them into the sea. The little shack, the rattling rotting barn were gray-bitten with sea salt, beaten by the damp wind until they had taken on the color of the granite hills.

1. Pick out examples of figurative language in the selection.
2. What two things are being compared in each example you find?
3. How are the two things alike?
4. Is the comparison directly stated or only suggested?

New Directions in English, Book 8, Harper and Row, 1970, p. 189

2

## Mrs. Martin's Diary*

Even though none of us completely understood what was happening, I couldn't help being moved by the solemn dignity of Sonki's funeral. It was very different, of course, from any funeral I've ever seen before. Yet in some ways it seemed almost familiar. I guess we are all alike more than we realize in our reactions to death. Maybe, this is a strange idea-but it was almost like watching a play, perhaps an ancient Greek tragedy performed in one of the outdoor amphitheaters of Athens. All of the people in the village were gathered for the occasion, just as Athenians would have been for a drama festival. The men were wearing black and white skirts and ceremonial feather headdresses.

Most of the attention was focused on Sonki's body and on Pako, so I guess they could be considered the leading characters. The procession from the pankosi to the grave was like the dramatic movement of a Greek chorus. The slow, rhythmic walk of the Indians bearing the body to the grave site; the gentle lowering of the canoe; the graceful way the men looped the vine into a ring and each, in turn, passed it down over his body and stepped out of it; Pako's dignified, almost emotionless acceptance of the vine when it was handed to her--it was all done with such ease and precision that it seemed as if it had been rehearsed and performed many times.

1. Why do you think Mrs. Martin felt the funeral rites seemed "almost rehearsed"?

2. Can you think of some ideas and attitudes that are probably similar in most burial rites?
3. Do you think that other ceremonies such as weddings, might have something in common in very different cultures?
4. Have you ever had an experience similar to the Martin's, when you watched a ritual or ceremony?

New Directions in English, Book 8, Harper and Row, 1970, pp. 238-239

3

"Song to a Sapsucker"

Joanne Oppenheim*

A Sapsucker
sat
in a sap tree.
He rapped
at the bark
till the sap
ran free.
A Sapsucker
sat
in a sap tree.
He waited for the dark
for the bugs
in
the bark to stick to the sap
which
was really
a trap
for a
Sapsucker's
fine
bug supper!

1. Where was the Sapsucker?
2. How does he make the sap run from the tree?
3. What did the Sapsucker wait for?
4. What happened to the bugs when the sap ran free?
5. What did the Sapsucker have for supper?
6. Why do you suppose this bird is called a Sapsucker?
7. Would you say the Sapsucker is clever? If so, how?
8. Is there really such a thing as a Sapsucker? How could you be sure?
9. Is this a poem or a story? How do you know?
10. How do most birds get their food?
11. What are some of the different ways that birds get their food?

Discovers, Stage 1, Houghton Mifflin, 1972, pp. 36-37.

4

"The Grasshopper's Young"*

Female grasshoppers lay as few as 2 or as many as 120 eggs at a time. The eggs, held together by a sticky substance made by the female's body are packed into the holes dug by her ovipositor. The female sprays more of the sticky material over the eggs, and it hardens quickly into a waterproof covering. The mass of eggs is called a "pod". The number of pods a female lays varies widely among individual grasshoppers and among different species. Most kinds of grasshoppers begin to lay their eggs in late summer and continue into autumn. Their eggs hatch the following spring. Unlike the young of most other kinds of insects, newborn grasshoppers look like the adults except that they have no wings. During the first forty to sixty days after birth, the young grasshopper "molts" (sheds its shell and grows a new one) five or six times. The wings grow to full size during the last molt, when the insects reach adulthood.

1. How many eggs do grasshoppers lay?
2. How many babies do human beings normally have at one time?
3. How does the ovipositor help the female lay her eggs?
4. Can you explain what a "pod" is?

5. What is unusual about the baby grasshopper compared to other insects?
6. Explain how a grasshopper grows to adult size?
7. When does the grasshopper get its wings?

Time to Wonder, Unit 3, Holt, Rinehart and Winston, 1973, p. 372.

## Section III

This section will provide an outline of levels and skills in the thinking processes. After studying this section, you may wish to review the writings of Bloom, Guilford, Piaget and Raths in more detail.

LEVELS-SKILLS OF THINKING PROCESSES

1. Literal Comprehension involves the recognition of that which the author specifically stated in the selection.

| Bloom | Guilford | Piaget | Rath |
|---|---|---|---|
| Knowledge | Cognition | Schemata | Observing |
| Comprehension | Memory | | Summarizing |
| | | | Collecting and Organizing Data |

2. Interpretative Level involves the recognition of alternatives which the author might have meant although didn't state specifically in the selection.

| | | | |
|---|---|---|---|
| Application | Divergent | Assimilation | Classifying |
| Analysis | Convergent | Accommodation | Interpreting |
| Synthesis | | | Looking for Assumptions |
| | | | Hypothesizing |
| | | | Applying Factors and Principles |

3. Creative Comprehension involves the individual drawing upon his background of information, his value system and his originality in demonstrating that which the author specifically stated or implied in the selection.

| | | | |
|---|---|---|---|
| Evaluation | Evaluation | Equilibrium | Imagining |
| | | | Decision Making |

# DESCRIPTIONS OF THE THINKING PROCESSES

## AN OVERVIEW

The following pages include a brief description of each of the thinking processes as defined by the authors. It will be necessary for individual groups and teachers to become more familiar with the writing of each of the selected authorities.

The descriptions in this package are included merely to familiarize the teachers with the thinking processes. Selecting a base for thinking processes as related to reading comprehension is recommended. School psychologists and guidance counselors can be very helpful in explaining the cognitive and affective factors of thinking and feelings, as related to students' learning and behavior. They can also provide activities in these areas that enhance reading comprehension.

## Description of Levels-Skills of Thinking Processes

## (Chart #2)

The thinking (thought, mental, cognitive) processes have been identified in three major categories-Literal, Interpretative, Creative-hereafter referred to in this package as the "thinking processes". The categories equated with the Levels and Skills of Reading Comprehension are outlined and described on Chart #1.

For the purpose of this package four current major authorities have been selected for their contributions in the area of cognitive thinking. Each of these authorities has identified thinking by definition and/or hierarchy. These areas parallel many of the objectives found in good reading programs.

These authorities have been selected because they are familiar to educators and are quite frequently the references used for reading programs. The definitions and classifications posited by Bloom, Guilford, Piaget and Raths lend themselves to comprehension skills development in any reading program.

The authors of this package recognize that other sources could also have been selected. Group leaders, administrators, curriculum specialists, psychologists and teachers are encouraged to include other references fitting their needs and programs.

In using the references cited in this package, it is suggested that teachers become thoroughly familiar with the contributions of the authority they prefer. In selecting an authority use his structure as a basis for correlating reading comprehension with the thinking processes. For example, if the group were going to use Bloom's taxonomy for cognitive domain, it would be advisable for the members to become knowledgeable about the taxonomy

as defined and ordered by Bloom. Time and practice should be spent in identifying the thinking that occurs at each level.

By doing this the teacher can begin to "see" reading comprehension as a thinking process. Of course thinking does not require reading material in order to exist, however, being able to use a given reading skill in order to comprehend the material, does require thinking. This important distinction should not be overlooked. In addition, the reader seldom, if ever, uses a single reading comprehension or thinking skill in isolation. Overlapping of skills and levels is not only necessary but is also desirable.

As in reading comprehension, the levels of thinking and the concomitant skills are subject to the influence of past experiences, individual purposes, and situational time frames.

BLOOM'S TAXONOMY OF

COGNITIVE DOMAIN

1.00 Knowledge involves simple recall or memorization of information, rules and methods. It requires the individual to remember facts and data.

Example: When did the Civil War end?

Who wrote the poem "Fog"?

What is the sum of 36 + 2?

In what city is the state capital of New York?

Instructional objectives stated in terms of the knowledge level include:

knows names, dates, places

locates information in the selection

labels pictures, items, charts, maps

matches pictures, word, phrases

sequences stated events and actions

describes relationships among characters as stated

defines rules and principles

states facts, data or information

tells a simple story

recognizes and remembers dates, names, places and events.

2.00 Comprehension Level involves simple understanding. It requires basic understanding for what is being communicated by the writer or speaker.

Example: What main point is the author making?

Which actions of John's indicate that he is disappointed in himself?

Explain what the author meant by "batter up".

Instructional objectives at the comprehension level may include:

explain the statement, process, method

summarize the relationship between two characters, events or actions

compare characters, events, actions

associate main ideas and relevant points

summarize relevant details

identify topic, principles, processes, methods

3.00 Application Level involves the ability to use rules, ideas, principles, processes and methods in new situations. The individual is required to remember, to understand and to apply what he knows to tasks and situations.

Example: What theorem would you use to solve this problem?

Solve this problem by using fractions.

What things did we talk about yesterday that would help us to draw new conclusions about the effect of air pollution?

What syllable is accented in the word "approval"?

Instructional objectives at the application level may include:

demonstrate by solving a problem

discover a rule or a principle

apply rules, principles to new situations

relate what is presently known to new tasks

show application of known information

predict from what is presently known

separate facts from opinions

4.00 Analysis Level involves the breakdown of the whole into its parts. It requires the ability to "see" the relationships between the general and specifics.

Example: Outline the main ideas and the specific points under the main topics for this chapter.

What references in the library would you use to find out more about the Everglades?

Are there any other meanings for the word "run"?

Illustrate by drawing a chart of the changes you noted when you looked at the leaf under the microscope.

Instructional objectives stated in terms of the analysis level may include"

recognize implied information

describe the logical steps to solving a problem

recognize literary style, themes, plots

identify information for relevancy to situation or topic

use references to verify evidence

predict beyond what is stated

paraphrase ideas or information in own words

5.00 Synthesis Level involves the ability to construct the parts to form new wholes. The new form created often represents abstract ideas, new versions of communication, new modes of expression and new plans and procedures. It requires a highly developed imagination and creativity to perform this level of synthesis.

Example: A story rewritten in the form of a play, poem.

A new method to solve a math problem.

A new procedure to follow the steps of a science experiment.

A series of original suggestions to solve a problem.

Instructional objectives stated in terms of synthesis level may include:

combine rules and procedures to form new rules, procedures.

explain the procedures for an activity, problem

solve task

design something new

select the best method, procedures to adapt to a new task

rearrange procedures, steps, alternatives

6.00 Evaluation Level involves the ability to judge material, ideas, information and data by some pre-selected criteria. The criteria, as established, may be set by the individual (internal) or may be established by someone else (external).

Example: What is your opinion about the book?

On what do you base your decision?

In what ways does your evaluation fit the rules?

Why do you agree with the author's views?

Instructional objectives stated in terms at the evaluative level may include:

make comparisons and contrasts

justify conclusions and judgments

relate information to values held

support ideas and opinions with evidence

interpret based on internal or external standards

criticize by set standards

prove and disapprove by evidence

## GUILFORD'S PRODUCTIVE THINKING

Memory . . . "Ability to recall, recognize, and reproduce specific material presented at an earlier time." p. 25

Cognition . . . "The discovery, rediscovery, or recognition of information." p. 23

Divergent Production . . . "The production of a diversity of answers in situations where more than one answer may be acceptable. It employs the information as a 'springboard' to many possible responses."

Convergent Production . . . "The production of right answers which are generally closely determined by the information given . . . encouraged in the classroom situations where the teacher has a particular answer to a question in mind." p. 29

Evaluation . . . "Determining the correctness, suitability, acceptability, or goodness of information or conclusions." p. 29

Aschner, Mary Jane and Rish, Charles E., Productive Thinking in Education, New York. National Association and Carnegie Corporation, 1965

## PIAGET'S INTELLECTUAL DEVELOPMENT

Schemata in the simplest interpretation means the concepts or categories one develops to mentally adapt to and organize environment to the individual. The development of schemata allows the individual to "deal with" the constant input of stimuli from daily living. All new data and experiences are organized into existing schemata. Once schemata are formed, they are extended, altered, and broadened to become more generalized.

In fitting the stimuli into the existing schemata, the individual learns to recognize and remember the likenesses and differences that allow him to categorize and classify the input into his schemata.

Schemata are the structures of development that change with maturity. Adults have different schemata than do children. These changes flow from one developmental level into the next by the processes of assimilation and accomodation.

Assimilation is the process by which the individual takes in new stimuli (experiences and/or perceptions) from his environment and fits them into his existing schemata. Assimilation is a constant and expanding process as individuals grow and develop. All individuals are constantly surrounded by stimuli which must be accounted for. It is the process of assimilation that allows the individual to "handle" this input by sorting it and organnizing it into his schemata. It is by this process that schemata are extended and altered.

Accommodation is the process of accounting for those stimuli which don't fit into the individual's existing schemata. When an individual cannot place new

stimuli into an existing schemata, he accommodates the new stimuli. In this case, he has to change or develop a new cognitive structure.

Equilibrium is the state of the balance between assimilation and accommodation. Without this balance, an individual would be unable to function cognitively. It provides for the interaction of the individual with his environment. Every individual strives to function in a state of equilibrium. When faced with new stimuli from his environment, the individual first tries to assimilate it into his existing schemata. If this is possible, he has maintained equilibrium. If this is not possible, he attempts to alter his existing schemata or forms a new schemata. When he completes this, he has maintained equilibrium. In this way, growth and development become cumulative for the individual.

RATH'S

THINKING OPERATIONS from TEACHING FOR THINKING*

"Perhaps most people will agree that thinking is an important aim of education and that schools should do all that they can to provide opportunities for thinking. How can this be done? What are some of the ways that excellent teachers do it?" (pg. 6)

1. Comparing

"When we ask children to compare things, ... they have the chance to observe differences and similarities in fact or in contemplation. They examine two or more objects or ideas or processes with the idea of seeing what relationships one has to another. They seek points of agreement and of disagreement. They observe what is present in one and missing in another.

"This process of comparing involves abstracting and holding the abstraction in the mind while attention is paid to the objects being compared." (pg. 6)

2. Summarizing

"The idea of a summary is to state in brief or condensed form the substance of what has been presented. It is a restating of the gist of the matter, of the big idea or ideas. There is a requirement of conciseness without the omission of important points.

"To do this, one begins by reflecting upon the experience. One thinks back, and this can be done in a great number of ways." (pg. 6-7)

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* Raths, Louis E.; Jonas, Arthur; Rothstein, Arnold; Wasserman, Selma. Teaching for Thinking. Columbus, Ohio. Merrill, 1967

"Frequently there is an opportunity to combine operations of summarizing and comparing. The latter is often done in terms of a series of specifics, and children can be asked to sum up what has been said about likenesses and differences." (pg. 7)

3. Observing

"Behind the assignment to observe, there is the idea of watching, of noting, of perceiving. Usually we are paying strict attention; we are watching closely and for a purpose; we are involved in something; and we have good reason for noting carefully. On some occasions, we concentrate on details; at other times on substance or on procedures and sometimes on both. Sometimes we are concerned with great accuracy of observation and sometimes only with approximations." (pg. 7)

4. Classifying

"When we classify or sort things, we put them into groups according to some principles that we have in mind. If we are asked to classify a collection of objects or ideas, we begin to examine them, and when we see certain things in common, we start by putting those objects or ideas together." (pg. 9)

"To classify is to bring order into existence; it is to contribute to the meaning of experience. It involves analysis and synthesis. It encourages children to make order out of their own world, to think on their own, to come to their own conclusions. It is an experience which can contribute to the maturing of young people." (pp. 9-10)

5. Interpreting

"When we interpret experience, we explain the meaning it has for us; interpreting is a process of putting meaning into and taking meaning out of our experiences. If we are asked how we got a particular meaning out of our

experience, we give supporting details in defense of our interpretation. ... Whenever there is reaction to experience, it is possible to check one's inference against the facts to see if the data support the interpretation."

"There is a tendency for children (and adults, too) to generalize on the basis of insufficient evidence. Also, there are tendencies to attribute causation, validity, and representativeness to data where these qualities are in doubt." (p. 10)

6. Criticizing

"When we criticize, we make judgments; we analyze and make evaluations. We do this in terms of some standards that are implicit in our statements, or we state the standards explicitly. Criticising is not a matter of finding fault or of censuring. It involves critical examination of the qualities of whatever is being studied; hence it is a designation of elements of worth as well as an indication of defects or shortcomings." (pg. 11)

"On the occasion of any criticism, it is well to ask for evidence in support of the comments made, to search for the standards which the critic is using and to contrast them with alternative standards which could be applied. It is well to accept criticism from children and to encourage them to reflect upon and to examine the criticial comments which they have made... In our relationships with children, we should convey the impression of respect for them, and this includes an acknowledgement of their right to criticize, their right to share in formulating the values which direct their lives." (pg. 12)

7. Looking for Assumptions

"By definition, an assumption is something that is taken for granted. We may, for example, take for granted that something is probably true, or that something else is probably false. We think of a fact as true, as

obvious, as not to be questioned in a particular context. An assumption, on the other hand, may be true, or probably true, or false or probably false; we don't know for sure and hence, our need to assume it in the absence of factual support." (pp. 12-13)

"In every situation where a conclusion is drawn, one or more assumptions are being made... Through a process of respectful scrutiny, children come to see which assumptions are critical; it is the kind of discrimination which is important." (pp. 13-14)

8. Imagining

"To imagine is to form some kind of idea about that which has not been wholly experienced. It is a form of creativeness. We are released from the world of fact and reality and are free to roam where, perhaps, no one else has ever been or ever will be. But we roam in fancy. We make mental pictures. In other words, we imagine." (pg. 14)

"When we ask for the release of the imagination, we then cannot ask for supporting data." (pg. 14)

9. Collecting and Organizing Data

"We seldom give students an opportunity to do independent work. By "independent", we mean work that starts out with a student's own curiosity, his own questions, his own seeking. There is a tendency for us to supply the student with information and to ask him to assimilate it. There are times, of course, when our assignments require him to examine several books and to collate the findings. This is one example of collecting and organizing data." (pg. 15)

10. Hypothesizing

"An hypothesis is a statement which is proposed as a possible solution to a problem. It suggests a way of going at something. Very often it also

represents an effort to explain why something will work, and it operates as a guide in going ahead with the solution of a problem. It is tentative and provisional. It represents a guess." (pg. 15)

"There is little doubt that this imaginative projection of possible solutions to an enigmatic situation is thought-provoking. Those who use this kind of assignment find it challenging and interesting to the students. They find also that it emphasizes thinking." (pg. 16)

11. Applying Facts and Principles in New Situations

"In general, a student is supposed to have learned certain principles, rules, generalizations, or laws. He is also supposed to be familiar with relevant facts. The situation which is presented to him is supposed to be new and supposed to be a challenge. Does the student know which principles are applicable here? Does he know how to apply them? Can he supply the relevant facts, if any are missing? Can he disregard irrelevant data if the teacher has purposely included some?" (pg. 16)

12. Decision Making

"This is much like the previous operation, with one major exception. In the previous section, much emphasis was placed upon laws, principles, generalizations, or rules. In decision-making, these are not omitted, but increased emphasis is given to the role of values. What should be done and why? In this case, the "why" is supposed to be revealing of the values which the student cherishes." (pg. 17)

"Are values important in the thinking operations? We think they are. Our desires, our hopes, our purposes most often generate the power to think. We think in order to achieve ends we hold precious. But all too often, we are unaware of the goals we prize, or we conceal the motives of our actions.

It is here assumed that strong lights should be shone on the values which impinge upon problematic situations. These are matters of choice, and choosing is often best served by comparing, observing, imagining, and all the other operations heretofore mentioned." (pp. 17-18)

# TEST THEORY OF THINKING PROCESSES

DIRECTIONS: Circle the letter that represents the best answer. Check your answer with the suggested answer in this packet.

## BLOOM'S COGNITIVE DOMAIN

1. Name the first five presidents of the United States.
   This is an example of:
   a. Bloom's knowledge level
   b. Bloom's application level
   c. Bloom's synthesis level
   d. Bloom's comprehension level

2. Write a letter using the standard form for business letters given in class.
   This is an example of:
   a. Bloom's synthesis level
   b. Bloom's comprehension level
   c. Bloom's application level
   c. Bloom's evaluation level

3. In the following passages, identify the facts that are true or false by drawing a line under the true and circling the false statements.
   This is an example of:
   a. Bloom's evaluation level
   b. Bloom's synthesis level
   c. Bloom's analysis level
   d. Bloom's comprehension level

4. Being able to make a cake by following the directions in the recipe.
   This is an example of:
   a. Bloom's comprehension level
   b. Bloom's synthesis level
   c. Bloom's application level
   d. Bloom's evaluation level

5. I would rather read mystery stories than any other kind of stories.
   This is an example of:
   a. Bloom's comprehension level
   b. Bloom's synthesis level
   c. Bloom's evaluation level
   d. Bloom's analysis level

6. What does the term "run on the bank" mean as it is used in the selection? This is an example of:
   a. Bloom's synthesis level
   b. Bloom's analysis level
   c. Bloom's comprehension level
   d. Bloom's knowledge level

## GUILFORD'S CONVERGENT/DIVERGENT PRODUCTION

1. Does every syllable have to have a vowel?
   This is an example of:
   a. Guilford's memory
   b. Guilford's convergent production
   c. Guilford's divergent production
   d. Guilford's evaluation

2. In the story we have just read, what would you have done to solve the mystery of the missing glove?
   This is an example of:
   a. Guilford's divergent production
   b. Guilford's convergent production
   c. Guilford's memory
   d. Guilford's evaluation

3. As you review for the test in social studies, be sure to study your notes about Thomas Jefferson.
   This is an example of:
   a. Guilford's memory
   b. Guilford's cognition
   c. Guilford's evaluation
   d. Guilford's convergent production

4. Write three words that contain short vowels.
   This is an example of:
   a. Guilford's memory
   b. Guilford's evaluation
   c. Guilford's divergent production
   d. Guilford's cognition

5. Based on the first-hand account of the witness to the crime and what the evidence suggests, who do you think stole the money?
   This is an example of:
   a. Guilford's convergent production
   b. Guilford's memory
   c. Guilford's divergent production
   d. Guilford's evaluation

# RATHS' TEACHINGS FOR THINKING

1. What facts does the author state to support his conclusions?
   This is an example of:
   a. Raths' interpretations
   b. Raths' observing
   c. Raths' imagining
   d. Raths' criticizing

2. Alphabetize the following words.
   This is an example of
   a. Raths' observing
   b. Raths' hypothesizing
   c. Raths' comparing
   d. Raths' classifying

3. "I do not allow children to use slang in may classroom," the teacher said. "The classroom should be one place where students always hear standard English. It may indeed be the only place," she added.
   This is an example of:
   a. Raths' interpreting
   b. Raths' criticizing
   c. Raths' looking for assumptions
   d. Raths' decision-making

4. Jim is four feet tall and lives on Elmwood Drive next to Black Creek. The water in the creek behind his house is three feet deep. Is it safe for Jim to wade across the creek in back of his house? If not, why?
   This is an example of:
   a. Raths' applying facts and principles to new situations
   b. Raths' observing
   c. Raths' decision-making
   d. Raths' interpreting

5. We often hear people say, "If you don't wear you rubbers when you go outside on a rainy day, you will catch a cold." What facts do we know that prove (disprove) this statement?
   This is an example of:
   a. Raths' summarizing
   b. Raths' looking for assumptions
   c. Raths' observing
   d. Raths' interpreting

6. I'm going to find out if pizza is really the favorite food of nine-year- in our school.
   This is an example of:
   a. Raths' observing
   b. Raths' interpreting
   c. Raths' hypothesizing
   d. Raths' decision-making

7. In what ways are trains like airplanes?
This is an example of:
   a. Raths' summarizing
   b. Raths' observing
   c. Raths' comparing
   d. Raths' hypothesizing

8. What could you make if you had a ball of string, some cardboard, two paper clips, and a red crayon?
This is an example of
   a. Raths' observing
   b. Raths' imagining
   c. Raths' summarizing
   d. Raths' comparing

9. "Do you have any other books about fossils? I already know all the things in this book, and I want to find out more information for the report I'm writing," The student said to the librarian.
This is an example of:
   a. Raths' hypothesizing
   b. Raths' looking for assumptions
   c. Raths' collecting and organizing data
   d. Raths' observing

10. After many attempts and much effort on the part of individuals, the Wild Life Conservation groups were successful in influencing Congress to pass a law in 1959 which forbids the hunting of wild mustangs.
This is an example of:
   a. Raths' hypothesizing
   b. Raths' observing
   c. Raths' criticizing
   d. Raths' summarizing

11. I noticed that all the people at the meeting were teenagers.
This is an example of:
   a. Raths' summarizing
   b. Raths' hypothesizing
   c. Raths' comparing
   d. Raths' observing

## PIAGET'S DEVELOPMENTAL PROCESSES

1. "Now I get it," said Tom. "It finally makes sense."
   This is an example of:
   a. Piaget's schemata
   b. Piaget's assimilation
   c. Piaget's equilibrium
   d. Piaget's accommodation

2. "It's not hard to solve problems like this one, when you know fractions," said Fran.
   This is an example of:
   a. Piaget's schemata
   b. Piaget's accommodation
   c. Piaget's equilibrium
   d. Piaget's assimilation

3. I never knew so many things were made out of paper.
   This is an example of:
   a. Piaget's accommodation
   b. Piaget's assimilation
   c. Piaget's equilibrium
   d. Piaget's schemata

4. "I always know a maple tree when I see one," said Robin.
   This is an example of
   a. Piaget's schemata
   b. Piaget's equilibrium
   c. Piaget's accommodation
   d. Piaget's assimilation

# TEST THEORY OF THINKING PROCESS

## ANSWER KEY

### Bloom's Cognitive Domain

1. a
2. c
3. c
4. b
5. c
6. c

### Guilford's Convergent-Divergent Production

1. b
2. a
3. d
4. a
5. d

### Piaget's Developmental Process

1. c
2. d
3. a
4. a

### Rath's Teaching for Thinking

1. b
2. d
3. d
4. d
5. b
6. c
7. c
8. b
9. c
10. c
11. d

## Section IV

This section provides activities and practices for developing question/response techniques.

### QUESTION/RESPONSE ACTIVITIES

This section of the package can be used as a "lecturette", with the group leader "telling" the group about the do's and don't's of questioning. Included in this would be a talk about "when the student says _____." Group leaders are encouraged to expand upon the suggestions and to draw examples from actual experiences in the classroom. Another suggestion for using this section would be to use brainstorming with the group. Ask the group to list the do's and don't's of questioning. The group can then discuss the lists for the purpose of selecting guidelines for the classroom.

In using the "when the student says" section, the group leader can write the stem on the board and ask the group to discuss what their reactions and responses would be to the student who said that. Additional response stems can be added by the group leader or given by the group.

## OVERVIEW OF TECHNIQUES OF ASKING GOOD QUESTIONS

Developing skill and competency for asking good questions requires the teacher to:

1. know the skills of reading comprehension as related to the thinking processes.
2. have a purpose in mind toward which the question can be directed.
3. be familiar with the material or topic about which the question is being asked.
4. be aware of the thinking, experiential and language backgrounds of the students who will be responding to the questions.
5. be flexible in wording a given question in several different ways to get at the purpose of the questioning.
6. practice building good questions and questioning techniques which will produce the desired responses from students.
7. attend to the response feedback from students in order to evaluate the question itself, as well as the objective toward which the question was directed.

# THE DO'S OF GOOD QUESTIONS

DO:

1. think through the objective of the question and select words appropriate to the questioning task.
2. make sure that the stressed skill is developed in the question asked.
3. keep the questions brief and to the point.
4. use language students know, understand, and use.
5. give students time to think about the question, especially at the interpretive and creative levels.
6. look for nonverbal signs that the student may not understand the question; puzzled looks, frowning, etc. may mean a lack of understanding.
7. present questions with a pleasant, non-threatening delivery, paying careful attention to your own nonverbal attitudinal cue toward children.
8. give students immediate positive feedback for their responses and/or efforts.
9. let the students know the purpose of the question.
10. when a student answers a question correctly, follow it up with another question for him at a higher level of thinking.
11. try rephrasing the question a student has answered incorrectly before deciding he doesn't "know" the answer. An incorrect response could be the fault of the question, not the responder.
12. keep a record, on paper, of individual student's responses to aid in identifying strengths and weaknesses among students and in planning for future questions.

13. allow students to ask questions of each other and the teacher.
14. give students opportunities to make up questions about what they have read, and then give them the opportunities to ask their questions of the group and of each other. The level of questions they make up, as well as the vocabulary they use, will provide the teacher with valuable information about their comprehension and thinking skills.

15. ask students to evaluate the teacher's questions. The student who says, "That's a dumb question!" may be saying something about the question or the teacher. It does not necessarily mean he does not know the answer.
16. keep the questioning periods brief and enthusiastic. Children enjoy the challenge and excitement of a well-planned, stimulating question/answer period.
17. allow children to "pass" on their chance to answer the question. Attitudes about themselves and others will influence the desire to respond.
18 include discussion time during the questioning time. Discussing and expanding upon responses are natural outgrowths of a good question.
19. ask the question before naming an individual student to answer it. The most productive question/answer periods are those situations where all students are participating without raising their hands or otherwise being singled out.

# THE DON'T'S OF GOOD QUESTIONS

DON'T:

1. ask questions that "trick" children.
2. ask too detailed questions that "dig out" all the minute details, and don't ask questions that are so broad they can be answered without reading the material.
3. ask questions that threaten, place blame, or criticize children.
4. ask questions "off the top of your head."
5. question everything a child reads.
6. ask questions that invade the privacy or infringe upon the student's areas of sensitivity or vulnerability.
7. force or pressure a child to respond.
8. remind a child of his past errors in answering questions.
9. "hit" a student with questions that both you and he know he cannot answer.
10. tell a student he is wrong, and "Johnny will answer it."
11. ever use sarcasm in questioning students or in reacting to their responses.
12. "pick on" students with questions.
13. indicate to students that an incorrect response is the same as failure, or that he is doomed to fail later because he misses questions now. Finding out why he "missed" a question is more important than knowing that he "missed" it.

# INTERPRETING STUDENT RESPONSES

When a student responds to a question, he is

- willing to share his ideas.
- verbalizing his thinking.
- indicating comprehension/non-comprehension of the question.
- expressing his background of experience and his knowledge about the data of the question
- displaying his ability to use language to express his knowledge, ideas, and values.

What a student says is also influenced by his

- past successes and failures in answering questions.
- speech and hearing limitations.
- attentiveness to the reading/thinking/questioning act.
- personal goals and purposes, as well as an understanding of the goals and purposes that have been set for him.
- view of himself and his relationship with the other students and the teacher.
- physical condition and his emotional well-being at the given time.

WHEN THE STUDENT SAYS, "_____"

1. The correct response (the one the teacher is expecting).

"Fine; thank you; you are right; that's good, etc."

Follow the question with another one or two at a higher cognitive level of thinking or reading skill. In this way, the student can extend his thinking. Very little is ever learned by "one-shot" responses. Stay with the student long enough to help him expand his thinking.

2. An incorrect answer due to inaccurate facts.

"Let's check the facts. Read page 24 again."

"Let me ask you another way." (It may be that the question was not clear to the student.)

"Did you understand the question?"

"Did you understand what I meant by (repeat the question)?"

"What do you think I meant when I asked (repeat the question)?"

3. "I don't know what you mean." "I don't get it."

"Are there any words I said that you don't know?"

"Would it help you if I asked (rephrase the question)?"

"It's probably not a very good question. I think you could answer this kind of question." (Ask another question you are sure he can answer.)

4. "That's a stupid question."

"Let me rephrase it then."

"It could be, but I think you could answer it because you like hard questions."

"Would you like to help me make up another question about _____?"

"You are right. Let's try another question."

5. Rambling, disconnected responses.

Run on answers could mean that the question is too broad, and the student doesn't really know how to answer it. Or it could mean that the student doesn't see the point of the question and is trying to cover his problem by rambling.

Tactfully interrupt with "I see what you are getting at. Perhaps we could all think for a minute, and then you and some others could tell us the most important thing about _____."

"I really don't understand your answer. Perhaps it would help if you could think of another way of saying it."

6. One word or single-phrase responses.

Single words or phrases as responses to questions are often the result of over-questioning for details or over-training at the lower levels of questioning.

"That's good. Can you add anything else to _____?" Repeat what the student has said and then add, "Can you think of anything else about _____?"

7. Responses that are not only incorrect in factual material but also indicate faulty reasoning.

Immediately readjust the questioning to a lower level of thinking. Ask the student to relocate the information in the article. Then slowly retrace the logical reasoning by moving from the lower levels of questioning to the higher one.

Do not ask questions at the higher levels until the student has retraced the thinking processes.

8. Refuses to answer the question.

All children should be allowed to "pass", without feeling pressured or embarrassed. Teachers should try to analyze the reasons why a student "passes", through careful observations or by private conferences following the sessions. An occasional "pass" is not significant, but the student who often refuses to answer poses a real problem for the teacher. A patient, caring attitude on the part of the teacher is often necessary to bring children to a level of "openness" in answering questions.

9. If you think the student is unable to answer the question because he has not read the assignment.

"I know you could answer the question if you had read the article carefully. You have answered many questions like this before."
"Would you like to take some time later to read over the assignment? I know you could answer the questions if you read the selection."

10. "I think I know, but I forgot what it is."

There are times when it is more important for a child to "save face" than it is to give the correct answer.

This often means that the student is covering up. When in doubt, "I think you know what it is. Let me ask it another way." Ask another level question, at a lower level, one you know he can answer. Then suggest that he re-read the article with the original question in mind.

## THE LEARNING PROCESS IS MADE UP OF THESE THINGS

1. Acquisition: gathering bits of information and experiences and storing them away.
2. Transformation: acting on, putting together these stored bits with some new information.
3. Evaluation: ability to internalize the whole process.

### PSYCHOMOTOR

Manipulative or Motor Skill Area

Motor coordination
Eye/hand coordination
Right/Left etc.

### COGNITIVE

Development of Intellectual Skills

1. Knowledge: engages in recall behavior; "just plain remembering things"
2. Comprehension: can use facts in a meaningful way
3. Application: can apply what has been learned to change behavior; uses abstractions
4. Analysis: separates complex whole into parts
5. Synthesis: take all the bits and pieces and put together as a whole
6. Evaluation: ability to internalize the whole process; make judgments

### AFFECTIVE

Attitude and Value

Values: objectives that use the term attitude

Total life experiences

Internalizing a set of ideas or values

Responding voluntarily

Willingness to attend to task

DESIGNED BY: GATES-CHILI CENTRAL SCHOOL DISTRICT

MAJOR CATEGORIES IN THE COGNITIVE DOMAIN

OF THE TAXONOMY OF EDUCATIONAL OBJECTIVES (Bloom, 1956)

Description of the Major Categories in Bloom's Cognitive Domain

1. KNOWLEDGE

Knowledge is defined as remembering previously learned material. This may involve recall of a wide range of material, from specific facts to complete theories, but all that is required is bringing to mind of appropriate information. Knowledge represents the lowest level of learning outcome in the cognitive domain.

2. COMPREHENSION

Comprehension is defined as the ability to grasp meaning from material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond simple remembering of material and represent the lowest level of understanding.

3. APPLICATION

Application refers to the ability to use learned material in new and concrete situations. This may include the application of rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.

4. ANALYSIS

Analysis refers to the ability to break down material into its organizational structure so that it may be understood. This may include the

identification of parts, analysis of the relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of material.

5. SYNTHESIS

Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of unique communication (theme or speech), a plan of operation (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.

6. EVALUATION

Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose), and the student may determine the criteria or be given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all the other categories plus conscious value judgments based upon clearly defined criteria.

## BLOOM'S COGNITIVE DOMAIN

## TAXONOMY OF BEHAVIORAL OBJECTIVES AND OUTCOMES

| Illustrate General Instructional Objectives | Illustrative Behavioral Terms for Stating Specific Learning Outcomes |
|---|---|
| **KNOWLEDGE** | |
| Knows common terms<br>Knows specific facts<br>Knows methods and procedures<br>Knows basic concepts<br>Knows principles | Defines, describes, identifies, labels, lists, matches, names outlines, reproduces, selects, states |
| **COMPREHENSION** | |
| Understands facts and principles<br>Interprets verbal material<br>Interprets charts and graphs<br>Translates verbal material to mathematic formulas<br>Estimates future consequences implied in data<br>Justifies methods and procedures | Converts, defends, distinguishes, estimates, explains, extends, generalizes, gives examples, infers, paraphrases, predicts, rewrites, summarizes |
| **APPLICATION** | |
| Applies concepts and principles to new situations<br>Applies laws and theories to practical situations<br>Solves mathematical problems<br>Constructs charts and graphs<br>Demonstrates correct usage of a method or procedure | Changes, computes, demonstrates, discovers, manipulates, modifies, operates, predicts, prepares, produces, relates, shows, solves, uses |
| **ANALYSIS** | |
| Recognizes unstated assumptions<br>Recognizes logical fallacies in reasoning<br>Distinguishes between facts and inferences<br>Evaluates the relevancy of data<br>Analyzes the organization of a work (art, music, writing) | Breaks down, diagrams, differentiates, discriminates, distinguishes, identifies, illustrates, infers, outlines, points out, relates, selects, separates, subdivides |

| SYNTHESIS | |
|---|---|
| Writes a well-organized theme<br>Gives a well-organized speech<br>Writes a creative short story (or poem or music)<br>Proposes a plan for an experiment<br>Integrates learning from different areas into a plan for solving a problem<br>Formulates a new scheme for classifying objects (events or ideas) | Categories, combines, complies, composes, creates, devises, designs, explains, generates, modifies, organizes, plans, re-arranges, reconstructs, revises, rewrites, summarizes, tells, writes |

| EVALUATION | |
|---|---|
| Judges the logical consistence of written material<br>Judges the adequacy with which conclusions are supported by data<br>Judges the value of a work of art, music, writing, by use of internal criteria<br>Judges the value of a work of art, music, writing, by use of external standards of excellence | Appraises, compares, concludes, contrasts, criticizes, describes, discriminates, explains, justifies, interprets, relates, summarizes, supports |

# BLOOM'S PICTURE ACTIVITY

Directions:

The purpose of the activity is to help teachers to become more aware of the various levels of questions and to give them some practice in writing and comparing questions.

Review the material in this package about Bloom's Cognitive Domain. This can be a lecturette or a reading assignment activity for the group prior to the activity.

Using an appropriate picture large enough for demonstration purposes, write questions using Bloom's six levels for the cognitive domain. Share these questions with others in the study group or compare questions with those included on the following pages.

DO QUESTIONS HELP US TEACH?

I. KNOWLEDGE LEVEL

A. How many people do you see in the picture?

B. How many cars do you see in the picture?

C. True or False? One of the children is riding a bicycle.

D. What is the man wearing?

E. Outline four things that are happening.

F. List the number of children in the picture.

G. Identify the means of transportation in the picture.

H. State the environment in which the picture is taking place.

I. Describe the season of the year in which this scene is taking place.

J. How are these people related to each other?

II. COMPREHENSION LEVEL

A. State in your own words what is taking place in the picture.

B. Give an example of a middle-class value by naming an article of clothing.

C. Summarize what is taking place.

D. What do you think will happen as the man walks up the sidewalk?

E. Point out the place where these people may live.

F. Draw another picture showing the kind of street you live on.

G. Draw a picture showing your family.

III. APPLICATION LEVEL

A. How could you make a black family feel welcome in your community?

B. Describe how you feel when you finally see someone you have been expecting.

C. Describe how it would feel to be the only black family in a white community.

D. Dramatize a situation in which you are meeting someone for the first time.

E. Write a play that represents what the first day of school might be like for one of the children in the picture.

IV. ANALYSIS LEVEL

A. Pick out the characteristics in the picture that are indefinite in meaning. Then write a brief statement after each, indicating possible definitions that might be given.

B. What conclusions concerning the feeling of the people in the picture do you believe are justified?

C. Analyze the reasoning in the following statements.

1. I will not have anything to do with blacks in my neighborhood.

2. Mr. Jones claims not to be prejudiced in his feeling, but demonstrates the falsity of this claim by putting his house up for sale when a black family moved next door.

3. Blacks cannot be considered militant because less than one out of ten are members of the Black Panthers.

V. SYNTHESIS LEVEL

A. Write as many interesting titles for this picture as you can.

B. Suppose you were on a committee to better human relations. What problems would you work on in order to improve this area?

C. Do you think schools should be racially balanced?

D. Review what has happened in this picture, and make your own predictions as to what will happen to this family.

E. What standards can you devise that would be helpful in determining whether a community would be receptive to accepting a black family?

F. A black family has moved to a new area. They are looking for a community in which to settle. One of the things that will influence their decision will be the school their children will attend. When visiting two different schools in two different areas, what questions would you ask the school principals and faculty in order to determine the better location?

G. How many hypotheses can you sugest to explain why this family has chosen this particular community to live in.

H. Draw up a plan to help acquaint this family with the community of Rates.

VI. EVALUATION LEVEL

A. To what extent would the community of Rates meet the needs of the family in the picture? (You may make inquiries in the community to answer the question.)

B. Before moving to the community of Rates, the family visit R School and talks with the principal and the faculty. They are still considering which community to move to. Are the people at R. School qualified to discuss life in this community? Are they likely to be biased? What do you think they will reveal about their feelings toward a black family in their community?

C. Do you think this information will be accurate? Will it agree with knowledge this family already has on the community?

D. Have a panel discussion on the pros and cons of the family moving to the community of Rates.

E. Would you favor strict or less strict laws that would prevent blacks from moving to Rates? Give four reasons for your answer.

F. Argue all sides of the proposition that it would have been better for all concerned if blacks did not move to Rates.

G. How would you rate the importance of the following factors if you were to move to the community of Rates: price of the homes, school system, taxes, shopping facilities, parking regulations, snow removal policy, climate, political affiliation of the town, proximity to a large city, number of blacks living in the community. Explain your listing.

## ACTIVITIES USING STORIES AND RELATED QUESTIONS

Read the following selection. Then read the questions that could be asked about the selection. Place the questions in categories according to thinking Literal, Interpretive, and Creative Reading Comprehension Levels.

Check your answers with the answer key in the package.

NOTE: After this activity is completed, time should be allotted for the group to discuss the reasons why questions were placed at the various levels.

### LARRY'S STORY *

Larry and his mother and Mark lived in a building behind the hardware store. Mr. Grady owned the building. It was an old house that had been made into many small apartments. Their apartment used to be the kitchen and another room of the old house.

Larry did not like to go in by the front door of the building to get to his apartment. His mother always went in by the front door and went down the hall. But Larry had his own way to get in. He always climbed the rickety fence and went in the back way.

The rickety fence was between Larry's building and the one next door. It closed off what had been a wide path to the back of the house. It was made out of old doors nailed together.

The fence moved as Larry climbed up on it. As he jumped down to the other side, he had to be very careful. There was a can filled with old pipes and boards to one side. A stack of boxes and parts of an old bed were near one wall. Other junk lay here and there. This could have been a nice yard. But it was only a place to throw junk.

Larry walked by the junk to the back door of the apartment house. His apartment was the first one after the door. It was just one big room with a small kitchen and a small bathroom. It was almost as full of things as the yard. But it was always clean.

As Larry opened the door to the apartment, he could hear Mark laughing. It made him feel good all over just to hear his little brother.

"Over the Rickety Fence" by Edith Battles

* Fearon Publishers
2165 Park Boulevard
Palo Alto, California 94306
© 1967
page 6

## QUESTIONS RELATING TO LARRY'S SELECTION

1. Does Larry live in a house?
2. Why did Larry think the yard could have been a nice yard?
3. Do you think Larry (Mark) goes to school?
4. What was the building like that Larry, Mark, and their mother lived in?
5. List some things that you would call "junk".
6. Where does Larry sleep?
7. What are some of the things that a person living in Larry's neighborhood might do to clean up the neighborhood?
8. Draw a picture of Larry jumping over the fence. Don't forget to draw how the yard looks.
9. List the things Larry did before he opened the door to this apartment.
10. Describe Larry's neighborhood as you think it might look.
11. How old do you think Larry is?
12. List two words to describe what the fence looked like.
13. Have you ever seen a yard like the one in the story? Tell us about it.
14. How do you think the yard could be fixed up? Would it take very much time to clean it up? How much?
15. How does Larry feel about living in this apartment?
16. What are some of the things Larry and Mark could do when they are both at home?
17. Who are the children in the story?
18. Where was the rickety fence?
19. Why do you think Larry felt good when he heard his brother laugh?
20. Where did all the "junk" in Larry's yard come from?

21. What is Larry's brother's name?
22. What was the fence made out of?
23. Would you think that this apartment is located in the city or country?
24. What did Mr. Grady own?
25. How old do you think Mark is?
26. What are some of the things which could happen to Larry when he climbs over the fence?
27. If you lived in this apartment, would you enter the same way Larry does? Why? Why not?
28. Who owned the apartment building?
29. What was the fence built for?
30. What was in the yard?
31. Tell about the part of the passage you liked the best.
32. Describe the yard behind Larry's yard.
33. When did Larry have to be careful?
34. What could be some of the reasons why people would throw junk in the yard?
35. Draw a picture of the apartment building where Larry lives.
36. If you lived in a two-room apartment with your family, what problems might you have?
37. What does it mean to you when Larry "felt good all over" to hear his brother laugh? Have you ever felt like this?
38. With whom did Larry live?
39. Is Mr. Grady related to Larry?
40. What are some things that might be called "junk"?
41. Pretend Larry was interested in ecology. Where could he go to find information on cleaning up the environment?
42. What is a rickety fence?

43. What would cause something to be called "junk"?
44. Describe what the author means when he says the apartment is "almost as full of things as the yard"?
45. Pretend you are showing a friend how to get to Larry's apartment. Draw a map to show your friend the way from our school. Label all the streets on your map.
46. What does Larry's mother do during the day?
47. Where do you think Larry's father is?
48. What is the difference between a hardware store and a grocery store?
49. Tell what the building was like before it was made into apartments?
50. Describe Larry's apartment in your own words.
51. Why do you think that Larry's mother doesn't go into the apartment the same way Larry does?
52. Would Larry ever go into the apartment by the front door? When? Why?
53. How many children are in the family?
54. Do you think it bothered Larry's mother when Larry used the back way to come into the apartment?
55. Is the apartment building large or small?
56. What would be a good title for this passage?
57. How did Larry enter his apartment?
58. Draw a picture of what Larry's apartment looked like.
59. How do you think Larry felt when he walked through his back yard?
60. What does the fact that the apartment was always clean tell you about Larry's mother?
61. How much older do you think Larry is than Mark?
62. Why do you suppose Larry's family lived in this apartment?

63. If you were Larry, how would you tell a friend how to get to Larry's apartment from you house or apartment?

64. Where was their apartment?

65. What do you think a rickety fence is?

66. If you were Larry, how would you fix up the yard?

67. Why don't you think Larry liked to use the front door of the apartment building?

68. How many rooms are there in Larry's apartment?

ANSWER KEY FOR COMPREHENSION AND THINKING PASSAGE-LARRY

1. Literal
2. Creative
3. Interpretive
4. Literal
5. Literal
6. Interpretive
7. Creative
8. Interpretive
9. Interpretive
10. Interpretive
11. Interpretive
12. Literal
13. Creative
14. Creative
15. Creative
16. Creative
17. Literal
18. Literal
19. Creative
20. Interpretive
21. Literal
22. Interpretive
23. Interpretive
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50. Creative
51. Interpretive
52. Creative
53. Literal
54. Creative
55. Literal
56. Interpretive-Creative
57. Literal, Interpretive, Creative
58. Creative
59. Creative
60. Interpretive
61. Interpretive
62. Interpretive
63. Interpretive
64. Literal
65. Interpretive
66. Interpretive
67. Interpretive
68. Literal

## Mike's Story

The purpose of this activity is to aid the teachers in seeing the relationship between the reading comprehension levels and the skills that might be included in these levels. Any skills that might be added by the group can be allocated to specific level appropriate to the school's reading program.

Directions:

Read the following story about Mike. Then read the questions that have been selected from this story. Identify for each question the appropriate reading skill and comprehension level. Check your answers with the suggested answer key.

Another way to use this activity would be to ask the group to individually write questions according to reading skills and reading comprehension levels and then to check these questions with the questions selected for the story.

## MIKE'S STORY

All week, Mike had been looking forward to the fun he was going to have on Friday. The children at the Pinewood School would not have school that day because of a teachers' meeting. Mike had planned to spend the whole day playing outdoors in the snow. Friday finally came. He woke up early, got dressed in his warmest clothes, quickly ate his breakfast, and went outdoors. He ran across the yard to Jeff's house, but Jeff's mother told him that Jeff had gone to the "Y" with Steve. "Probably shooting baskets," he grumbled to himself. "I'll be glad when I am fourteen and can join the Teen Team," he wished.

As he started back to his own yard, he saw Billy and Scott making a

snowfort in Scott's year. "Hi! Mike," Scott called. "Want to help us make a fort?" Mike thought a minute and decided he didn't want to play with the little kids. "They're such babies," he thought, "always doing dumb things." He wondered if he were ever that dumb.

Mike scuffed the snow as he walked around his yard. "Nothing to do. Might just as well be in school," he thought. He kicked up a flurry of snow with his boot, bent over, and scooped up a handful of snow.

"Sure is tough being the only ten-year-old on the block. There's only Ellen and Alice, but who wants to play with girls?" He frowned at the thought of playing with the girls. He wished a family with a ten-year-old boy would move into the neighborhood. He wondered that as he thoughtlessly threw snowballs at the big, bare maple tree.

Suddenly he stopped dead still and stared at the snow spots his snowballs had made on the tree trunk. "Wow! Two out of three hits. Not bad. Not bad at all," he bragged to himself. "Maybe, just maybe, I'll pitch this year instead of playing outfield." A smile crossed his face as he scooped up another handful of snow and packed it into a really hard snowball.

## QUESTIONS RELATING TO MIKE'S STORY

1. How do you know that Mike usually goes to school?
2. Where does Mike go to school?
3. Why is there no school today?
4. Which people in the story are Mike's age?
5. What month could this story have taken place?
6. What is Mike's problem? Have you ever felt like this?
7. Why was Mike looking forward to Friday?
8. How old are Jeff and Steve?
9. How much older is Mike than Billy?
10. Do you think Mike lives in the country or the city?
11. What things did Mike do before he went out to play?
12. What does it mean when it says "shooting baskets"?
13. Draw a picture of a snow fort.
14. Draw a picture of a big, bare maple tree.
15. What does it mean when it says "bare maple tree"?
16. In what ways do you think Mike is disappointed? Why?
17. Does Mike feel differently at the end of the story? How?
18. What would be a good title for this story?
19. What sport does Mike like to play?
20. When is this sport played?
21. What does it mean when it says "two out of three strikes"?
22. What position does Mike want to play this year? Do you think he has ever played this position before?
23. Why is Mike smiling and happier at the end of the story?
24. What do you think Mike will do during the rest of his day off?

ANSWER KEY FOR COMPREHENSION SKILLS AND LEVELS

Mike's Story

1. Drawing conclusions - Literal
2. Detail of fact - Literal
3. Detail of fact - Literal
4. Identifying relationships - Literal
5. Drawing conclusions - Interpretative
6. Forms appreciations - Creative
7. Detail of fact - Literal
8. Detail of fact - Literal
9. Identifies relationships - Literal
10. Drawing conclusions - Interpretative
11. Sequence for details - Literal
12. Interprets word in context - Interpretative
13. Forms appreciations - Creative
14. Forms appreciations and values - Creative
15. Interprets words in context - Interpretative
16. Justifies evaluations - Creative
17. Forms appreciations and values - Creative
18. Selects main ideas - Literal, Interpretative, Creative
19. Identifies details (from experiences) - Literal
20. Identifies details (from knowledge) - Literal
21. Identifies details (from knowledge) - Literal
22. Interprets words in context - Interpretative
23. Draws conclusions - Interpretative
24. Forms appreciations and values - Creative

CATHERINE THE GREAT

Read the following social studies article. Then place the questions at the end of the article into the appropriate levels. Then identify the reading skills and specific thought process required to answer the question. Check your selection with the suggested selections for the article.

READING IN THE CONTENT AREA OF SOCIAL STUDIES

Grade 6
Unit 1
Understanding 6
Sub-Understanding 1, Part 1

CATHERINE THE GREAT (1762-1796)

Catherine became czarina of Russia in 1762. She started a rather spectacular time in Russia--called the golden age of nobility. She accomplished a great deal for her country during her time but not for the peasants and serfs. All of her benefits went to the upper class.

Of the 36 million people in Russia at the time, about 34 million were peasants. Twenty million people were serfs on private estates, and the rest were state or royal land peasants. Thousands of new nobles were created and given land serfs. Industries increased and were awarded serfs as slave labor. Thousands of serfs were put into the army. Serfs paid rent either in cash, crops, or labor. Their working conditions were miserable. Discipline was kept by whipping. A law in 1767 kept serfs from complaining against masters. The owner of a serf had the legal right to punish him by sending him to convict labor in Siberia. The serf could not leave his plot of land; he could be bought or sold like a chair or a book.

A serious peasant revolt occurred in 1773 in order to end the terrible

conditions that existed. The revolt was put down with immediate and lasting effects. Following this time peasants hated their masters more, and the landowners treated their serfs even more harshly. In spite of all the changes that Catherine made, over 95 per cent of the people still were serfs on country estates. They still lived in their tiny villages, using crude wooden tools and giving their lords most of their labor and services.

# QUESTIONS ABOUT CATHERINE THE GREAT

## Literal

| | | |
|---|---|---|
| 1. | How long did Catherine reign as czarina of Russia? | Locates specific facts - Observing |
| 2. | Which people benefited most from the accomplishments of Catherine? | Locates specific facts - Observing |
| 3. | What were some of the ways serfs were punished? | Locates specific facts - Collecting data |
| 4. | Why did the peasants revolt in 1773? | Identifies relationships, cause and effect - Collecting and organizing data |
| 5. | What were some of the things that Catherine the Great did to help her country? | Summarizes details - Summarizing |

## Interpretive

| | | |
|---|---|---|
| 1. | What does "the golden age of nobility" mean? | Interpreting words in context - Interpreting |
| 2. | What might have been some of the reasons a serf would be punished? | Drawing conclusions - Looking for assumptions |
| 3. | How do you think Catherine decided who would get serfs? | Drawing conclusions - Hypothesizing |
| 4. | How do you suppose a serf would feel toward Catherine the Great? | Drawing conclusions - Interpreting |
| 5. | Can you draw any comparisons between the Russian serfs and slave labor in our country? | Identifying relevant details - Classifying |
| 6. | Do you think that any of the nobles ever questioned the idea of owning serfs? What might they have done about it? What effect might it have had? | Drawing conclusions - Hypothesizing |
| 7. | How might history have changed if the peasants had won the revolution? | Predicting outcomes - Applying factors and principles |

Creative

| | | |
|---|---|---|
| 1. | Pretend you are a serf who, by some good fortune, can read and write. Write a diary for a week telling of the happenings of each day. | Justifying evaluations - Imagining |
| 2. | If you had been Catherine the Great, what would have been some of the things you would have done for your country? | Forming appreciations and values - Decision making |
| 3. | Do you think that Catherine deserved to be called "the Great"? | Forming values - Decision making |

## BASAL READER ACTIVITY

Directions:

Read the following two selections from the Ginn Reading Program. Then read the questions that were recommended in the teacher's guide. Place each question into the following categories: Comprehension Level, Reading Skill, and Thinking Process.

Add other questions of your own. Discussion should follow this activity. It should be remembered that skills overlap and inter-relate and in discussing their categorization, teacher will become more familiar with the skills and their possible applications. A follow up activity to this exercise might be to choose a reading story from a basal book used in the school's reading program and have the group make up questions, analyze the questions in the manual or create activities that can supplement the use of the questions in the classroom.

## BASAL READER ACTIVITY

### BOZO*

Mike wanted a dog.

"This house is too little for a dog," said Mother.

"But I have a name for a dog," said Mike.

"I can name my dog Bozo."

"No, Mike," said Mother.

"This house is too little for a dog."

### COMPREHENSION QUESTIONS

1. What pet did Mike want? (dog)
2. Why did Mother say no? (The house was too small.)
3. How did Mike feel when Mother said no? (He was sad, perhaps angry.)
4. Do you think Mother had other reasons for saying no? (Cost, work in taking care of the dog, etc.)

*"Bozo" Lillian Moore
May I Come In? (p. 135)
Ginn 360 - Level 5

The "Empty" Wasn't Empty*

p. 19 Candida Palmer

Next morning, the bustling, noisy city lay crippled under a deep white cover. The snowplows screeched and labored up Sycamore. It was noon before Benny, with Chico's help, had the sidewalk clear outside his father's barber shop. Here were the seven inches they had hoped for, and the schools were closed. And here was the white, freshly fallen snow to play in. Stacking their snow shovels, they made for the vacant lot beside the "empty".

"Let's play forts," said Benny. "The first guy to knock out the other's fort will be the winner. You make yours here by the street, and I'll make mine up by the "empty".

COMPREHENSION QUESTIONS

1. Where were the boys shoveling the sidewalk? (In front of the barber shop)
2. How many inches of snow had the boys hoped for? (Seven)
3. Why were the boys pleased with the snow? (School was closed; they could play in the snow.)
4. Why did the boys decide to play in the vacant lot next to the "empty"? (They had more space to play there; there was less chance to break a window with a snowball, etc.)

*On the Edge
Ginn 360 - Level 12

IDENTIFICATION OF
COMPREHENSION SKILLS AND THINKING PROCESSES
ACCORDING TO LEVELS OF COMPREHENSION AND THINKING

| Comprehension Level | Reading Skill | Thinking Process |
|---|---|---|
| **Level 5, Ginn 360** | | |
| 1. Literal | Locates specific facts | Observing |
| 2. Literal | Locates specific facts | Observing |
| 3. Literal | Cause and Effect Relationships | Summarizing |
| 4. Interpretative | Making inference to draw a conclusion | Hypothesizing |
| **Level 12, Ginn 360** | | |
| 1. Literal | Locates specific facts | Observing |
| 2. Literal | Locates specific facts | Observing |
| 3. Literal | Locates specific facts | Observing |
| 4. Interpretative | Making inference to draw a conclusion | Interpreting |

## ON YOUR OWN WITH QUESTIONS

The following paragraphs have been selected for you to use in practicing writing comprehension questions within the literal, interpretative, and creative levels.

DIRECTIONS: Read the selection carefully, then think of a question that relates to a specific skill and level. Compare your questions with the questions of the others in your group.

### WATCH YOUR DIET AND LIVE

Dr. Jean Mayer, Professor of Nutrition at Harvard and Chairman of the First (1969) House Conference on Food, Nutrition, and Health

This article appeared in the magazine section of the New York Times, April 8, 1973. A portion is included in the following paragraph.

"I warned you that I would go from you to your husband before I talked about your children and your mother. I do so because he is, in many ways, the most vulnerable member of your family. Joe is approaching 40, weighs 30 pounds more than he did in college, and there is a history of high blood pressure in his family. I hope he gets a regular check-up and knows both his blood pressure and his cholesterol level. We have literally millions of persons in the United States whose blood pressure is elevated, and who either don't know it or don't do anything about it, even though we have more effective medication for hypertension than we have for any other chronic disease. I assume Joe is not one of these. At any rate, he would do well to eliminate his terrible habit of oversalting his food--even before he has tasted it. There is good evidence that this practice is likely to predispose to high blood pressure."

## A QUESTION OF VALUES

A Short Story by Sandra Mehlenbacher

Mark Brown tried to sit quietly in his seat. He didn't want the other children to know how angry and hurt he felt. He could tell that his face must be very red. His hands were very cold. His finger nails even looked blue. He wanted to cry, but yet he couldn't. Somehow he held it all inside.

He could still hear Mrs. Scarfor yelling, "That's the most ridiculous answer I ever heard. You obviously weren't listening to the question. Everyone else in the group has the answer I'm looking for but you."

Mark didn't think his answer was so ridiculous, but the teacher wouldn't even let him finish. Well, that was probably the last time she would call on him for at least a week. And he sure wasn't going to volunteer for at least three months.

It was true. Mark had problems. One of his biggest problems was reading. He just couldn't figure out those words fast enough to get his work done. As a result, he had other problems. He couldn't read his math work. He couldn't finish his book on the explorers in time. He couldn't even read his science work so that he could put his model rocket together. And science was his best subject!

There were some things Mark could do. He could wonder. He wondered where the lead in his pencil came from. He wondered how his school books were printed. He wondered where the snow came from and where it went when it melted. He wondered why Mrs. Scarfor always looked mad at him. He wondered about a lot of things.

His teacher wondered about some things, too. She wondered why Mark couldn't read like a fourth grader. She wondered why he hadn't stayed back. She wondered why the psychologist didn't find him retarded. She wondered why the reading teacher didn't get him out of her room. He obviously didn't belong there. He always looked as if he were in another world. The biggest wonder for Mrs. Scarfor was how she was going to put up with Mark until June.

Things didn't get better. Mark did not feel much like trying to read any more. In fact, he'd get mad all over every time he looked at the words in his book. After he got over feeling mad, he still felt real hurt inside.

## STUDENT RESPONSE ACTIVITIES

The following is an approach that might be used to evaluate student responses to questions. It provides the teacher with a recording format for the questions to be used. It is advisable to note the reading comprehension skill used to answer the question.

It is also advantageous to good questioning to list the comprehension level required to answer the question.

It is recommended that teachers begin using this format to record one or two students' responses and gradually add more students as the procedure becomes more familiar for use in the classroom.

It is further suggested that this be done periodically with the group, however, it is not appropriate for use as a daily classroom activity. Reviewing responses will aid the teacher's evaluation of the kinds of questions used and the types of responses given. Careful evaluation will facilitate both program and individual student's responses.

Teachers are encouraged to make revisions or adaptations of these techniques. Three-by-five cards with the questions written on them so that they can be punched out by student response is another possibility for recording responses. Other ideas developed by the group should be encouraged.

## RESPONSE FORM

DIRECTIONS FOR USING:

1. Enter the questions to be asked under the Comprehension Skills Column.
2. Enter the thought processes to be used by the student in responding to the question under the Thought Process Column.
3. Enter the student's name and date in the appropriate spaces.
4. To record information, enter as follows:
    a. + indicates a correct response to the question.
    b. - indicates an incorrect response to the question.
    c. R+ indicates a rephrasing of the same question with a correct response.
    d. R- indicates a rephrasing of the same question with an incorrect response.

## ROLE PLAYING

### A Technique to Practice Questioning and Answering Techniques

This activity is based on the article "Pollution Is a Major Problem". All participants should read the article prior to the Role Session.

DIRECTIONS:

Divide the group into student groups of 5 to 8 members. Select "teachers" - one for each group. The "teacher" will be given the questions that have been written about the article.

Select 2 or 3 recorders for each group. The recorders will be given the monitoring sheet from this package. Questions for the article have been included on the recording form. The groups will then enact the "Reading Group" situation. The group will be monitored by the recorders who may not participate in the activity of the group with regard to questioning and answering. They will record the individual member's responses as well as the teacher's reactions.

Following the "class", the entire group will discuss the recorders' reports. This discussion should include:

The "student" reasons for responding as they did to the questions.

The "teacher's" reactions to the "student" responses.

The recorders' rationale for placement of the responses.

RESPONSE FORM

Date: _____

| Question and Specific Reading Comprehension Skill | Thinking Comp. Level | Bloom's Thinking Process | Student | Student | Student | Student | |
|---|---|---|---|---|---|---|---|
| | | | | | | | |

## POLLUTION IS A MAJOR PROBLEM

Pollution is a major problem of the world today. It affects everyone, and something must be done to stop it. Pollution can be found in the air, in water, and on the land. The air is polluted by automobiles, people burning trash, and many other things. When factories don't have proper filters, soot and other substances fly through the air. Air pollution is a hazard to people's health and is unsightly. Particles in the air block out the rays of the sun, and if something isn't done, the world will enter another ice age.

Water is polluted when factories dump wastes into lakes and rivers. Some laundry soaps leave residues on water. Many times people dump garbage into water, where it rots and causes pollution. When water becomes polluted, it takes more chemicals to purify it, and as a result, water tastes bad. People complain about how water tastes, but they don't try to stop pollution.

Land pollution is brought about when people dump garbage in heaps and just leave it. Old cars can be found piled in heaps. Litter and trash are allowed to be blown around on highways. Substances which can't be destroyed, such as glass and cans, are piled into heaps.

Pollution affects everyone, and something must be done about it. People must start to care before it is too late. Laws must be passed to prohibit the polluting of air, land, and water.

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Munzert, Alfred M., "Symbol Communication Technique", Longwin Inc., Buffalo, New York, 1970. p. 47

POLLUTION IS A MAJOR PROBLEM

Date: _____

| Reading Comprehension Skill Elicited | | | | | | | | Thinking Comprehension Level | Thinking Process by Bloom |
|---|---|---|---|---|---|---|---|---|---|
| What is the reason why the author wrote this article? Main idea | | | | | | | | | Comprehension |
| Name some of the causes of pollution. Locates facts | | | | | | | | | Knowledge |
| In what ways is air polluted? Locates facts | | | | | | | | | Knowledge |
| What are some ways people cause pollution? Locates facts | | | | | | | | | Knowledge |
| In what ways do you think pollution affects everyone? Drawing conclusion | | | | | | | | | Application |
| How would laws help to control pollution? Predicting | | | | | | | | | Evaluation |
| Are there any laws that you could suggest? What would they do to help? Predicting, appreciating | | | | | | | | | Analysis Synthesis |
| What could you do as a person to prevent pollution? Valuing | | | | | | | | | Evaluation |

## ROLE PLAYING

### A Technique to Practice Questioning and Answering Procedures

DIRECTIONS: Remedial Activities for Reading Comprehension Skills

Read the article about "Remedial Activities for Comprehension Skills". Using the Response Form, make up a series of questions according to the format used in working with "Pollution Is a Major Problem".

Follow the same procedure as with the previous activity, but use the questions made up by the group.

Using consensus decision-making, try to formulate 5 to 8 good questions that might be asked. These questions should be decided upon after the discussion of the activity.

CONSIDER:

What makes a good question?

What is the relationship between a good question and the response?

What do the responses tell you about the question?

Which questions are harder to make up? to interpret responses from? Why?

Are there any reasons why some questions seem to "overlap" in the thinking processes? in the reading skills? Why?

## REMEDIAL ACTIVITIES FOR READING COMPREHENSION SKILLS

All children, regardless of the severity of their reading problems, can think, and comprehension is a thinking activity. Comprehension in reading involves the skills of memory, the association of one's experiences with the ideas of another, and reflective thinking. Although children who can decode the printed words should be able to comprehend the material if the concepts involved are within their field of experiences, such is not always the case. Children need direction, encouragement, and specific instruction to learn how to apply their thinking skills to reading.

Comprehension is a difficult area for instruction. Comprehension terms and goals are not easily identified as they are for the other reading areas. Publishers' suggested methods for instruction are vague; for example, many teacher's guides offer techniques for instruction in comprehension which are limited to asking children questions. In usual practice, a child is asked a question; if he does not know the answer, one of his classmates is asked the same question. It would seem that such practices do not necessarily assist a child in developing comprehension skills.

The activities outlined in this package offer students a background of information about the relationships among reading skills, comprehension levels, and thinking processes. In working through these materials and creating additional exercises, teachers can help students develop cross curricular comprehension skills through the teaching-questioning processes.

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CLASSROOM ACTIVITIES WITH THE TELEPHONE DIRECTORY AS THE TEXTBOOK

1. Find unusual names in the directory. List the name, address and number.

2. Choose a name and from it list as many other words as possible that you can form from the letters in that name.
   Ex. Mason and Hamlin Co.
   son hand ham mail Sam man band sand can

3. Make a list of your relatives and friends that do not live in Rochester. After each name, write the town and the area code.

4. Make a list of the emergency numbers that should be used for your home.

5. Map Game. Find a road map for N.Y. State. Find the villages and cities listed on p. 10 of the call guide. Color the different area codes for N.Y. Make a key to show what code each color represents.

6. Write an essay entitled, "The Benefits of the Telephone."

7. Imagine that in some magic way you became a telephone directory. Write a story entitled, "My Life as a Phone Book."

8. Map Game. Label the area codes on a U.S. Map. Also put on the time zones. Why do we need to know about the time zones when we call long distance?

9. Research--How did people communicate before the telephone was invented?

10. Zip Codes--On page 4 of the Yellow pages, you will find Postal Information. Choose one of the following:
    a) Make a map of the major U.S. cities and label the zip codes.

    b) Make a map of the major N.Y.S. cities and label the zip codes.

    c) Make a map of the county and label the zip codes for all the towns and villages.

    d) Make a list of your relatives and friends and their addresses. Look up the zip codes for each town.

11. Research--Locate the states that produce wood for paper. Make a map showing their location. Find out about how wood is made into paper.

12. Make a map of the Rochester vicinity. Show where the exchanges are for each locality.

13. Research--Write a report on the invention of the telephone.

14. Make a map of the time zones around the world. Why is it important to be familiar with this information before making an overseas call?

15. Make a telephone. See The Book of Popular Science, Vol. 5, p.224.

16. Have a contest to see who can find the most names that are the same as famous people.

17. Make a mural showing how phones are manufactured.

18. Skit--Use your imagination and write a skit about some telephone idea.

19. Make a list of as many color, animal, or city names that are the same as people that live in Rochester.
    Ex. Fred Fox Yoland Dr.
    Charles Chick North Ave.
    or
    Winton Brown Thatcher St.
    Luella Red Vetter St.

20. Have a contest. Answer the following questions:
    Are there more Mobil or Sunoco stations?
    How many Jones' are there?
    How many shoe repair places are there in Rochester, Brockport and Victor?

21. How many phones do your neighbors have? Make a graph to show this information.

22. Get a map of our area. Locate points of interest--homes, stores, schools and discover which are in a mile, ½ mile or ¼ mile radius from our school.

23. Find out the prices of long distance calls to various U.S. cities or find the prices of overseas calls by calling the overseas operator.

24. THINK How many names are in the phone book? How could you get an accurate estimate without counting each name?

25. Imagine that you are having a party or building a house. Use the yellow pages and make a list of the services, addresses and numbers that you would choose to use.

26. If you had a leaking pipe, who would you call? Look in the yellow pages and decide which would be the best place to call. Share your reasons.

27. Research--Why are there blue pages?

28. How many books would it take to:
    a. reach from one end of the room to the other.
    b. reach one mile.
    c. reach 100 miles. (exponents).

29. How many books would it take to fill our classroom? the gym?

30. If the Rochester Telephone publishes 500,000 books a year, how many classrooms would it take to store them?

31. How many columns of names are in the directory?

32. If 1 directory cost $1.50 to print, how much does the Rochester Telephone spend on the printing for all of them? 500,000

33. Listening--- Lily Tomlin, Wichita Lineman, Mike Nichols and Elaine May, Stiller and Mearra

34. How many books would it take to reach the ceiling of our room? How many books would it take to make a stack as high as your are?

35. Plan a weekend in Rochester and use the yellow pages to find:
    a. places to see and visit
    b. places to stay
    c. restaurants
    d. shopping areas
    e. theaters
    f. transportation

36. Weighty problems
    a. What is the weight of one directory? Do they all weigh the same?
    b. What would 100 books weigh? 50? 75? 1000? 10,000?
    c. How many books would you need to equal 10 lbs.? 100 lbs.? 1,000 lbs.?
    d. How many books equal your weight?
    e. How many books equal 1 ton? 10 tons?
    f. How many books equal the weight of the class?

37. What portion of the book is: (fractions)
    a. blue pages
    b. white pages
    c. yellow pages

38. MATH PROBLEMS
    a. Make division or multiplication problems with phone numbers.

       Ex. Scott's 2472297
           mine x2545103

       Ex. Roseann's divided by 8 $8\overline{)2472707}$

       Ex. divide page nc. into phone number $363\overline{)2472707}$

    b. Whose number "weighs" the most?

b. List phone numbers and multiply each digit ( or add). Find the total for each.

Ex. 254-5103 2+5+4+5+1+0+3=
562-8182 5+6+2+8+1+8+2=

254-5103 2x5x4x5x1x0x3=

Do this for many numbers and see whose weighs the most?

39. Imagine that you are a telephone pole or a telephone? What experiences would you have? Write a story to tell of them.

Developed by Norma Bence-Walt Disney School, Gates Chili School District, Rochester, New York.

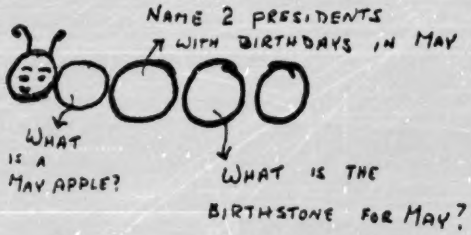
## CLASSROOM ACTIVITIES

I. Be a Detective!

Provide each child with a packet of cards with who, what, and where questions for a particular selection. First one to get all the answers is the winner. May be used as a group game.

The Worm

May be used for any subject, for certain selections, or research.




Riddles

Made by teacher or by children about story characters.

Role Playing

Students role-play character or events, etc., in story.

Comic Strips

Paste on cardboard, cut apart, and have children sequence them.

Sequencing Events

Have students identify events in a story. Write these on large cards. Students hold cards and place themselves in correct order.

Workbooks

Cut apart old workbooks for all levels of comprehension.
Pictures for sequencing, for writing main idea, idenifying feelings, etc.
Cut apart stories to sequence and give titles.

I Wonder

Make cloud shapes. On each cloud, have a question about relationships in the story or traits and reactions of characters. May be used individually or made into a game by giving time limits, etc.

Classroom Activities

Pantomime - Main idea

Collage

Choose pictures from a magazine depicting an emotion expressed by a character in the story OR to depict the mood of the story.

Book Jackets

Make puzzles out of book jackets. Student is to put the puzzle together and try to identify the theme of the book. Book may be checked to see if answers are correct.

Making Covers

Make covers for books to show the main idea of the story.

Mobiles - Main idea

Movies - on cardboard T.V. screen

Writing Playlets

II. Clues - Treasure Hunt (put clues on cutout of a treasure chest)

Scatter clues around the room which, when combined, may make up a statement, idea, or story.

Pictures

Provide pictures related to subject of the selection being read. Student chooses one, which to him reminds him of the story, and explains why.

Electric Board

Entitled "Fact or Opinion". Bulb lights when student makes correct choice. Cards may be changed to fit the material being read.

Story Telling

Change one event in the story. Have students tell how story would have ended.

Filmstrips

Children may preview a filmstrip, and write questions for others to answer independently. Teacher guidance will be needed.

Classroom Activities

III. If You Were

If you were (Nancy) in this story, would you have acted as she did? If yes, why? If no, how would your actions differ?

Poetry

After reading the selection, ask each child to write down three or any number of impressions from the selection. From these, write poetry, perhaps in form.

Decisions

Place four markers on the floor.

| agree | agree some | disagree some | disagree |
|---|---|---|---|

Children place themselves on marker which expresses their feelings about a statement or idea.

Finishing

Finish statements such as:

If I were president, . . .
If I could become anything I wanted, I would . . .

Pickle Barrel

Questions at all comprehension levels may be written on pickle shapes.

# USE OF QUESTIONS

## by

## Drew Tinsley

SKILL in teaching and success in learning may in part be determined by questions used in the classroom. The value of well planned and effective questioning has long been recognized in the context of instructional tasks and, more recently, has been given systematic attention in educational materials. The direction as well as the level of learning is greatly influenced by the questions students encounter.

Through the use of effective questions and questioning by teachers, students can participate in active involvement of their own learning. Questions are viewed by teachers as one of the most important instructional tools for helping students develop knowledge and skills in thinking. Empirical investigations of half a century indicate that most of a teacher's time and talk for instructional purposes are directed toward developing and asking questions.

Yet, reasonable indications persist that the value placed on the role of questions and questioning is all too seldom carried through to effective action in the classroom. There are a number of possible explanations as to why this situation exists. A fundamental element on the part of teachers, however, seems to be a lack of knowledge about and systematic application of a sound basis for making appropriate decisions.

Decisions about the use of questions for any given purpose from any given source are almost solely the prerogative of the teacher. Thus, it would seem that much, if not all, of the responsibility for determining the most effective means of using them must also be assumed by the teacher. How then may teachers make appropriate decisions about the purpose, nature, and use of classroom questions?

### Planning

A necessary first step in making these important decisions is in the area of lesson planning. The formats of typical lesson plans do not include this classroom role most frequently performed by the teacher. Key questions should be central to the lesson plan. Planning and developing a potential sequence of key questions and activities that ask students to focus their thinking in a specific direction establish a framework for the kinds of verbal behavior the teacher will perform in actually teaching the lesson.

Moreover, a sequence of questions, planned toward a specific objective, will enable the student to perceive and organize his learning in a purposeful way and will encourage him to pose questions of his own which increase his learning. The level of thought reached by the student is directly related to the questions asked by both teacher and student. Establishing the level or levels of thought to be reached by the student, then planning questioning strategies and activities for accomplishing this goal, are prerequisite steps for effective teaching and for learning as well.

Fortunately, a number of resources, both theoretical and practical, are now available which can help teachers in formulating productive questioning strategies. The work by Bloom (1956) and Guilford (1956), identifying cognitive processes in hierarchical complexity, can be used by teachers for planning, implementing, and evaluating their questioning behavior. Utilizing a model developed by Guilford (1956), teachers can



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plan and use questions in two productive ways: (a) those which direct students toward the same or similar answers (congruent thinking) or (b) those designed to develop a rich variety of acceptable response (divergent thinking).

Clearly, these are quite different ways of thinking and thus are dependent upon quite different kinds of cues. Each has its place at some point or points in teaching and learning situations. Numerous examples can be cited for both, but two easily identifiable uses of divergent thinking, less often seen, are in planning with students for goals or goal attainment and in considering ideas of projection—the "What would happen if . . ." kind of question.

The taxonomic structure identified by Bloom (1956) can be used by teachers to plan and measure each pedagogic question as well as each instructional objective in one of six sequential cumulative categories of thinking, from recall to evaluation. Paralleling Bloom's structure of the cognitive domain but including suggested questions for discussion and testing which foster the several types of higher order operations, Sanders' *Classroom Questions: What Kinds?* (1966) can be useful as one means of helping teachers to vary the cognitive emphasis of the questions they compose. More recently, Hunkins' *Questioning Strategies and Techniques* (1972), based extensively on Bloom, offers helpful guidelines for planning and for evaluating questioning strategies.

In a different context, Mosston's *Teaching from Command to Discovery* (1972) supplies a rational basis for selecting an appropriate teaching style. While not specifically directed toward the use of questions, his detailed descriptions provide an objective means for analysis of teaching styles and include use of questioning. His chapters on "Guided Discovery" and "Problem Solving" are particularly useful in this sense. More important, this book, viewing teaching as a chain of decision making, provides sound guidelines for planning a teaching-learning situation in which students can ask and use questions more effectively.

The importance of careful and deliberate planning for effective use of both teacher and student questions cannot be overemphasized. A limited bit of evidence suggests that teachers do not really understand the cognitive emphasis of the questions

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they plan (Tinsley, 1968), and an accumulating amount indicates that they use those questions demanding primarily the ability to recall (Stevens, 1912; Floyd, 1960; Adams, 1964; Pfeiffer and Davis, 1965; Davis and Hunkins, 1966; Tinsley, Watson, and Marshall, 1972).

If questions used in classrooms are significant in developing the cognitive powers of students (and it seems evident that they are), and if a primary goal of education is to develop critical thinking abilities (and we state that it is), then teachers must plan, use, and evaluate classroom questions and questioning to better accomplish these goals.

## Determining Effectiveness

Obviously, effectiveness in the use of questions can be measured only by the criteria employed in planning. Just taping a lesson and listening to the tape for teacher-pupil questions in relationship to responses and the objectives to be achieved will provide a teacher with some insight into questioning behavior. For example, if an instructional goal is that of divergent thinking, then the tape should yield evidence of divergent questions and responses on the part of both teachers and students. Working with taped lessons in this fashion can be a starting point for analyses and, ultimately, the teacher may design his own system appropriate to his particular situation.

Analytic systems have been developed which provide types of criteria for the investigation of thinking operations, based on Bloom (1956) and Guilford (1956). The Gallagher and Aschner system (1963) is based on Guilford's constructs. Another related to Sanders' system (1966) but including two additional categories—affectivity and procedure—is the *Teacher-Pupil Question Inventory* (TPQI) (Davis and Tinsley, 1967). Teachers can tape their classes and categorize teacher-pupil questions for five-minute segments or for the total lesson.

The TPQI, along with others, is described in detail in *Questioning Strategies and Techniques* (Hunkins, 1972), and numerous suggestions for use in planning and

valuating are given. This writer has modified the instrument for use in a preservice program so that each question can be identified by number in the order of occurrence. Also, a second instrument, the *Teacher-Pupil Response Inventory* (TPRI) (unpublished), was designed for use by observers in pairs—one noting questions with the TPQI, the other responses with the TPRI. The same procedure can be applied to a tape, first categorizing questions, then responses.

*Guided Self-Analysis System for Professional Development Education Series—Teaching for Inquiry* (GSA) (Parsons, 1968) can be useful to teachers for analyzing many of their instructional tasks, including questioning. This system is in six divisions, each of which is considered separately, and the results are then plotted into a teaching profile.

At the present stage of development, no one system or instrument is likely to provide all of the elements needed for thorough analysis of the use of questions. The use of present systems, however, by teachers, and by teachers and students working together, can be instrumental in changing the cognitive emphasis of classroom questions now and, hopefully, in stimulating the development of more productive systems in the future.

For more than half a century questions used in classrooms have been subjects of concern for instructional method as well as for empirical investigation. For the most part, these questions have emphasized recall more than any other activity and have provided few opportunities for students to engage in a variety of processes which involve thinking. Coupled with this situation has been a half century's insistence upon problem solving and critical thinking or, more recently, modes of inquiry and process learning.

It is obvious that our goals and our practices, our intent and our action, must be better correlated. Today's society, schools, and youth can no longer afford an educational system which continues to report that the questions it uses demand little more than recall of past knowledge by its students.

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